



FINAL REPORT

Towards Integrated Island Management:

Lessons from Lau, Malaita, for the implementation of a national approach to resource management in Solomon Islands

WorldFish Center Report to SPREP

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Hugh Govan, Anne-Maree Schwarz, Delvene Boso

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Contents

Executive Summary	8
1. Introduction and Background	10
1.1. The challenge for Solomon Islands.....	10
1.2. Policy response to these challenges	11
1.3. Policy context for Integrated Island Management	12
1.4. From policy to implementation.....	12
2. Review of national approaches to coastal resource governance.....	13
2.1. Existing policy and strategies	13
2.1.1. Local level.....	13
2.1.2. Provincial level	13
2.1.3. National level	14
2.1.4. Interactions between levels	14
2.2. Emerging policy.....	15
2.2.1. Fisheries Management Bill (2008).....	15
2.2.2. Protected Areas Act (2010).....	16
2.3. Practical experiences in coastal resource management	16
2.3.1. Field experiences	16
2.3.2. National, multi-stakeholder and cross-sectoral planning.....	16
2.3.3. Provincial natural resource management networking.....	17
3. Design principles for participatory management of natural resources	18
3.1. Building a nested system or “linking the levels”	19
3.2. Integrating the sectors or “horizontal coordination”	20
3.3. Costs – fiscal and transaction.....	20
3.4. Stakeholder roles and determining priority areas for support.....	21
4. A case study from Lau, North Malaita.....	25
4.1. Introduction to the case study	25
4.2. Stakeholder analysis.....	26
4.3. Financial and transaction costs	28
4.3.1. Costs to implementing institutions.....	34
4.3.2. Costs to the community	35
4.4. Implications of the case study for resource governance	36
4.4.1. Information and capacity needs	36
4.4.2. Media for transfer of information	37
5. Lessons from the Lau case study for extrapolation towards implementing a national IIM approach.....	39
5.1. Project activities.....	39
5.2. Community activities	39
5.3. Staffing.....	40
5.4. Transport.....	40
5.5. Information and capacity building.....	40
5.6. Institutional capacity.....	41
5.7. Potential financial costs of a CBRM approach.....	41
6. Principles, constraints and responses for IIM in Solomon Islands	43
6.1. Design principles for integrated resource management in Solomon Islands	43
6.2. Constraints and potential responses to implementation of IIM in Solomon Islands.....	44
6.2.1. Financial costs and government budgets	44
6.2.2. Scale	46

6.2.3.	Capacity and skills	46
6.2.4.	Information, research and monitoring.....	47
6.2.5.	Sectoral isolation.....	47
7.	A potential approach to implementing IIM in Solomon Islands.....	49
7.1.	Nested levels of IIM.....	49
7.1.1.	Operational units: community / village level.....	49
7.1.2.	Operational units: wider catchment or cluster of villages level.....	50
7.1.3.	Operational units: provincial level.....	51
7.1.4.	Operational units: national level	51
7.1.5.	Operational units: national, provincial and other networks	52
7.2.	Strategic approach to implementation of IIM in Solomon Islands	52
7.2.1.	Core sites.....	53
7.2.2.	Other communities.....	54
7.2.3.	Information coverage and needs	55
7.3.	Resourcing implications.....	55
7.3.1.	Provincial level resourcing	55
7.3.2.	National level resourcing	56
7.3.3.	Overall cost of IIM to lead ministries	57
8.	Concluding remarks	58
9.	Bibliography	60
10.	Annex 1: Main policy overlaps in the Fisheries and Environment sectors.....	62
11.	Annex 2: Transaction cost analysis of Lau Lagoon CBFM/Resilience project.....	63
12.	Annex 3: Cost-effective approaches to meeting information needs for CBRM: a potential framework.....	65

Acronyms

AM	Adaptive Management	MECM	Ministry of Environment, Conservation and Meteorology (pre mid-2010)
ARDS	Agriculture and Rural Development Strategy	MECDM	Ministry of Environment, Conservation, Climate Change, Disaster management and Meteorology (post mid-2010)
AusAID	Australian Agency for International Development	MFMR	Ministry of Fisheries and Marine Resources
CBD	Convention on Biological Diversity	MoU	Memorandum of Understanding
CBM	Community-Based Management	MPA	Marine Protected Area
CBFM	Community-Based Fisheries Management	NAPA	National Adaptation Programme of Action
CBRM	Community-based Resource Management	NBSAP	National Biodiversity Strategy and Action Plan
CBRM+	Community-based Resource Management approaches covering climate change vulnerability and adaptation assessment, ecosystem approaches, food security, and management of key species and habitats and appropriate use of protected areas	NCC	National Coordinating Committee (CTI-CFF)
CC	Climate Change	NCSA	National Capacity Self Assessment
CFMDP	Community Fisheries Management Development Project, PNG/ADB	NGO	Non Governmental Organizations
CPUE	Catch Per Unit Effort	NPoA	National Plan of Action (CTI-CFF)
CRISP	Coral Reef Initiative for the South Pacific	NRM	Natural resources management
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security	NTZ	No-take Zones
CTSP	Coral Triangle Support Program	NZAID	New Zealand Agency for International Development
EAFM	Ecosystem Approach to Fisheries Management	PA	Protected Area
EBFM	Ecosystem-based fisheries management	PDAM	Participatory Diagnosis and Adaptive Management
EBM	Ecosystem-based management	PoWPA	Programme of Work on Protected Areas
E-MAG	Ecosystem Management Advisory Group	RPoA	Regional Plan of Action (CTI-CFF)
FAD	Fish Aggregating Device	SIDT	Solomon Islands Development Trust
FSPI	Foundation of the Peoples of the South Pacific International	SI	Solomon Islands
HH	Household	SIG	Solomon Islands Government
ICM	Integrated Coastal Management	SILMMA	Solomon Islands Locally Managed Marine Areas Network
ICWM	Integrated Coastal and Watershed Management	SOPAC	Pacific Islands Applied Geosciences Commission
ICZM	Integrated Coastal Zone Management	SPC	Secretariat of the Pacific Community
IIM	Integrated Island Management	SPREP	South Pacific Regional Environment Programme
LMMA	Locally-Managed Marine Area Network	TNC	The Nature Conservancy
		V&A	Vulnerability and Adaptation Assessment
		WorldFish	WorldFish Center
		WWF	World Wildlife Fund

Exchange rate

The exchange rate used for this study was 1 US dollar (USD) = 7 Solomon Island Dollars (SBD)

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Towards Integrated Island Management:

Lessons from Lau, Malaita, Solomon Islands, for the implementation of national approaches to resource management

Executive Summary

Solomon Islands has recently developed substantial policy aiming to support inshore fisheries management, conservation, climate change adaptation and ecosystem approaches to resource management. A large body of experience in community based approaches to management has developed but “upscaling” and particularly the implementation of nation-wide approaches has received little attention so far. With the emerging challenges posed by climate change and the need for ecosystem wide and integrated approaches attracting serious donor attention, a national debate on the most effective approaches to implementation is urgently needed. This report discusses potential implementation of “a cost-effective and integrated approach to resource management that is consistent with national policy and needs” based on a review of current policy and institutional structures and examination of a recent case study from Lau, Malaita using stakeholder, transaction and financial cost analyses.

Policy priorities call for an integrated approach to achieving sustainable development goals through bottom-up, people-centred approaches at multiple scales and across all sectors with consideration of ecosystem linkages and the emerging threats posed by climate change. The approach to achieving these targets island-wide is termed in this report Integrated Island Management (IIM).

National and provincial budgets available for implementation of fisheries or environmental management are low and likely to remain so into the future. Given the widespread assumption that community based approaches will be used for resource management as well as conservation, climate change adaptation and disaster preparedness activities, amongst others, there is an urgent need to find affordable implementation mechanisms. IIM may provide this opportunity.

The case study of Lau, Malaita Province, highlighted key activities required to implement Community Based Resource Management (CBRM). The greatest expenditure was incurred in transport and technical advice with travel and community/committee meetings taking up the most time. This case study and other national experiences suggest that the cost of supporting CBRM in large numbers of communities would be too high to be supported by foreseeable national and provincial budgets for such activities.

Suggested design principles for achieving IIM in Solomon Islands include building on and improving the community based approach, incorporating broader social and ecological perspectives via an integrated cross sector approach and aiming for cost effectiveness and simplicity as strategies to ensure sustainability. Constraints such as finances, scale, capacity, information needs and sectoral isolation are discussed together with potential responses.

A potential approach to implementing IIM is outlined which nests community level management in wider catchment or district level planning processes supported by staff decentralized to the provincial level, with key coordination and technical support provided at the national level. Implementation would require an approach that gradually increases the number of communities or core sites directly

supported at the provincial level but develops effective means to encourage and support the majority of communities to improve management without these levels of direct support. The financial resources required to implement such an approach over the whole country are estimated to be in the region of 3 million Solomon Island Dollars.

A national discussion on appropriate and sustainable ways to ensure long term delivery of support to the majority of the rural population in Solomon Islands is urgently required before further investment is made in isolated and pilot approaches to fisheries management, climate change adaptation and ecosystem approaches to management. It is hoped that some of the points raised in this study will be useful for the design of sustainable inshore and coastal resources management and wider Integrated Island Management in Solomon Islands and will be able to draw from the following identified national strengths and opportunities:

- Community based approaches maximize the opportunities provided by strong communities and traditional tenure, and appear readily acceptable and potentially effective as a component of resource management.
- The evolving policy and legislative framework provides adequate support to approaches built around current best practice. Further emphasis is needed to ensure that sectoral policies take account of synergies with other sectors, promote joint planning and develop joint implementation strategies.
- Feasible management frameworks and implementation strategies for IIM could be developed and some options are explored in the present report which may be able to support achievement of wider national policy priorities including adaptation and risk reduction.

This study highlights that the community based approaches currently promoted in a variety of forms around the country will be too demanding in terms of human and financial resources to achieve wide national coverage as currently implemented. For affordable support and implementation of IIM in the long term the following issues will need to be addressed:

- Prioritize collaboration and cost sharing across government sectors to achieve community level delivery of services.
- Far greater emphasis on cost effectiveness of operations and CBRM+ including the consolidation of delivery for community support through one ministry such as the Ministry of Fisheries or a joint system.
- Careful consideration of the decentralization of certain key roles and budget headings to the provincial level while providing some of the more costly services centrally.
- Strategic support of the community based approach in key areas with the development of much less resource intensive support to the majority of other communities.
- Greatly increased attention to the types of information, education and means of delivery most likely to support IIM.
- Design a gradual approach in which roles are decentralized, provincial government develops capacity and assumes greater responsibility and, together with central government, assume more of the responsibilities currently handled by NGOs.
- Employment of a phased or staggered approach to implementation in provinces to avoid overburdening the system and allow opportunities for refining approaches.

Towards Integrated Islands Management: Lessons from Lau, Malaita, Solomon Islands, for the implementation of national approaches to resource management

1. Introduction and Background

The last five years have seen considerable progress towards addressing the management of natural resources in coastal areas of Solomon Islands with dozens of communities actively managing their coastal and marine resources and the emergence of significant policy relating to inshore fisheries, environment and protected areas (Govan 2009, MECM/MFMR 2009). However, “upscaling” and particularly the implementation of nation-wide approaches has received little attention so far and with the emerging challenges posed by Climate Change and the need for ecosystem wide and integrated approaches attracting serious donor attention, a national debate on the most effective approaches to implementation is urgently needed. This report aims to discuss potential models for Solomon Islands, for the implementation of “**a cost-effective and integrated approach to resource management that is consistent with national policy and needs**” based on the experiences of an ongoing management initiative at the community / district scale.

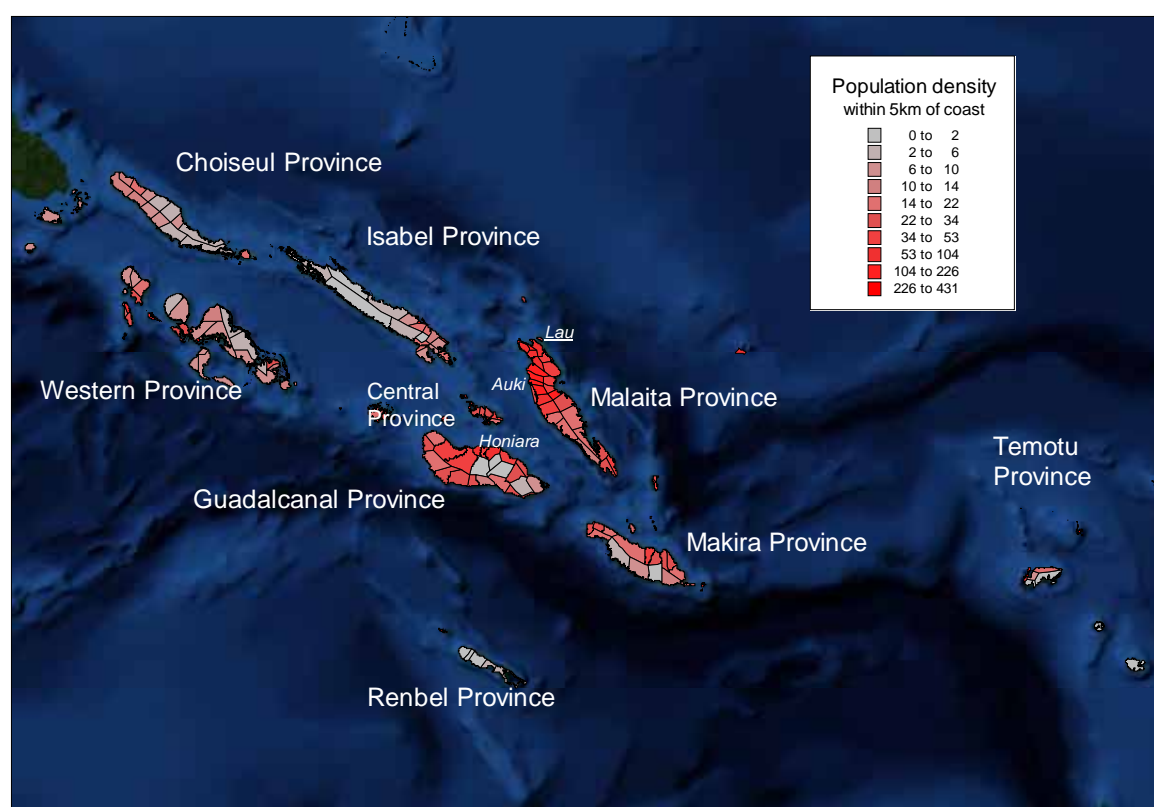


Figure 1: Map of Solomon Islands showing provinces and places mentioned in the text. Population density within 5 km of coasts is shown for all wards (data from Foale et al. 2010 and SPC PopGIS).

1.1. The challenge for Solomon Islands

Solomon Islands is heavily reliant on its natural resources for its extractive industries (mainly forestry, fishing and mining), and for the subsistence of the rural population which comprise 84% of it's approximately half a million inhabitants (Figure 1).

The pressures on these natural resources are set to increase in a spiral of population growth and resource depletion. Estimates concur that logging of natural forests will exhaust commercially viable stands by around 2012 if current harvesting levels continue (ARDS 2007). Inshore fisheries for subsistence and commercial purposes are thought to already exceed the expected coral reef productivity levels, and an additional 64% production is required to meet the projected demand of 2020 (Bell et al 2009, Gillett 2009).

Logging and unsustainable land based activities have indirectly impacted coastal habitats along with the inter-linked serial depletion of commercially important marine and terrestrial resources. The absence of natural resource governance to control degradation of the resource base combined with the failure to stimulate significant rural development (ARDS 2007) presents a considerable challenge for this young nation.

1.2. Policy response to these challenges

The Government of Solomon Islands (SIG) considers that people-centred rural development is one of its highest priorities (Medium Term Development Strategy 2008-2010). This decision is motivated by, among other factors, structural constraints of the SIG, the causes behind the recent civil tensions and the high population growth of Solomon Islands. In stating this priority, SIG recognizes the poor progress in rural development to date, its importance as a building block for lasting peace and stability and the key and unfulfilled role of natural resources in such development (ARDS 2007).

The Agriculture & Rural Development Strategy (ARDS 2007) lays out three priorities for rural growth and employment generation:

1. Improving local governance and service delivery
2. Supporting the local economy through more inclusive growth
3. Managing natural resources for the benefit of rural Solomon Islanders

The Government plans to address rural development by focusing on three areas:

- a) Local participation of rural communities in economic development, including through strengthening provincial governments
- b) Supporting agriculture, infrastructure and rural finance services
- c) Improving the management and sustainability of the country's rich natural resources

Stimulated in part by these plans, increasing amounts of attention have been directed at the national environmental management and sustainability policy framework, considered hitherto as a grossly inadequate (Lane 2006, Healy 2006). Outcomes include the establishment of the Ministry for Environment, Conservation and Meteorology (MECM) (now Ministry of Environment, Climate change, Disaster Management and Meteorology (MECDM)) and the Ministry for Fisheries and Marine Resources (MFMR) along with various policy documents that directly or indirectly address the securing of rural livelihoods and promotion of sustainable development. These include:

- Coastal Community Fisheries Strategy (2007)
- National Adaptation Programmes of Action (2008)
- Fisheries Management Bill (MFMR 2008-10)
- National Biodiversity Strategy and Action Plan (NBSAP; 2009)
- SI National Strategy for the Management of Inshore Fisheries and Marine Resources or "Inshore Fisheries Strategy" (2009)

- Protected Areas Act (2010)

1.3. Policy context for Integrated Island Management

The emerging policy guidance is clearly in line with SIG priorities and exhibits a high degree of consistency across the conservation and marine resource management sectors. The key and overarching features of the above policy documents are shown in Box 1 (see Annex 1 for more details).

Box 1: Key features of Solomon Islands environmental and marine resource policy emerging 2006-2009.

- **Sustainable development:** Sustainable management and utilization of natural resources for rural development and improved livelihood options.
- **Bottom-up and people-centred:** Locally appropriate approaches, particularly Community Based Resource Management, as the engine for socio-economic development and sustainability.
- **Multi-scale and multi-sectoral governance:** Integrated policy and action among sectors (such as Health, Environment and Education), and between local, provincial and national levels.
- **Ecosystem approach:** Ecosystem-wide, holistic and mainstreamed (incorporated into government policies and plans) approach to environmental management including wider ecosystem health, land-use, climate change adaptation and economic activities.

Sources: Coastal Community Fisheries Strategy (2007), National Biodiversity Strategy and Action Plan (2009), SI National Strategy for the Management of Inshore Fisheries and Marine Resources (2009), MFMR/MECM corporate plans

Solomon Islands policy makers are clearly calling for an integrated approach to development and resource management that caters for the diverse needs of all stakeholders. While such approaches could come under the definition of many of the catch phrases of recent years, most obviously Integrated Coastal Management (ICM), it is apparent that policy makers seek to ensure that the specific function of the approach is not lost by adopting an extraneous jargon, and hence at no point is ICM specifically mentioned in policy guidance.

Another drawback of the term ICM is that it is prone to misconception in island situations where there is no reason for distinguishing between “coast” and “non-coast” areas in the context of integrated management. While eventually Solomon Islands will need to select, or preferably develop, its own terminology, for the sake of this report the term **Integrated Island Management (IIM)** is adopted to signify an approach that aims to achieve the Solomon Island policy targets as outlined above in an island-wide or ridge to reef approach.

1.4. From policy to implementation

In terms of broad policy and draft legislation, much progress has been made since Lane (2006) assessed that there was no enabling policy, legislation or strategy towards ICM. Granted, there is still a need for policy and possibly legislation that ensures the inter-institutional coordination required for the support of IIM as outlined in the various sectoral policy documents. However, several authors contend (McDonald 2006, Healy 2006) that most provinces already have laws with which to support and lend legal authority to community resource management arrangements and that the main constraints are not within the legal arena (Lane 2006, Cox and Morrison 2004).

While policy is debated and developed, projects are being implemented, proposals formulated and funds allocated to environmental governance in Solomon Islands with no working framework or implementation plan outlining how resource management (let alone IIM) could be implemented at a national scale¹. This deficiency provides a unique opportunity to design a framework based on a thorough review of resource management experiences in the field as part of long-term iterative testing or piloting of approaches, which can ultimately inform development of more practicable policy and guide its implementation.

This report aims to discuss potential models for Solomon Islands, for the implementation of “a cost-effective and integrated approach to resource management that is consistent with national policy” based on the experiences of one ongoing management initiative at the community / district scale. The report outlines key stakeholders and their potential roles in the different phases of implementation, the key activities required, principal costs and capacity requirements, information requirements and finally proposes a model with staffing and logistical implications. It is hoped that this will help to fuel a national debate on the topic.

2. Review of national approaches to coastal resource governance

There are two major sources of guidance for the potential design of a resource management approach in Solomon Islands 1) existing policy and strategy and 2) an increasing body of practical experience primarily by NGO driven resource management initiatives.

2.1. Existing policy and strategies

The discussion to date has revolved around governance at national, provincial and local levels as well as the interactions between levels.

2.1.1. Local level

Solomon Islands has some 87% of land and inshore areas under customary ownership (Ausaid 2008), however the precise legal status or implications of this tenure are not altogether clear (Lane 2006). When combined with the large extent of the territory and the limited budget and capacity for national government to enforce management, there seems no alternative to building land and coastal resource management on community based and driven approaches. This raises another set of challenges, particularly the risk that materially very poor communities have strong incentives to unsustainably trade in their natural assets (e.g. forests or bêche-de-mer) and how to ensure that certain aspects of local management are coordinated or controlled in the national interest (e.g. watershed management or commercial or endangered species).

2.1.2. Provincial level

A Solomon Island system of resource management should reflect and build on the connection between Solomon Islanders and their land and allow landowners to participate as fully as possible. Well-equipped and committed provincial governments are far better placed - politically and physically - to assist in the community-development approach to resource management and have a critical role to play in advancing good resource governance (McDonald 2006). This level of governance faces a number of challenges including the fact

¹ With the possible exception of the National Plan of Action for the Coral Triangle Initiative which has been developed with the participation of a wide range of sectors and civil society stakeholders (MECM/MFMR 2009)

that there has been no local (sub-provincial) level of government since the abolition of Area Councils in 1998, which exacerbates the disconnect between regulatory roles of national government and customary sovereignty of land owners (Lane 2006).

Most provinces already have some legal basis with which to support community resource management arrangements but the biggest weakness is the complete absence of any enforcement (McDonald 2006, Troniak and Govan 2009). This can be directly attributed to the decline of the Provincial Government system over at least a decade; provinces suffer from poorly defined roles and functions, inadequate funding, isolation and weak relationships with National Government (Cox and Morrison 2004).

Given the vital importance of provincial government, not only for resource management but also for other service delivery and development aspects, it is not surprising that strengthening of local government is a high priority, not least to improve rural service delivery mechanisms (ARDS 2007, Cox 2009).

2.1.3. National level

The recent emphasis on environmental management and sustainability issues in national policy is making significant inroads into the weaknesses perceived at this level (e.g. Lane, 2006). There is however, still a need for some overarching policy and institutional reform to ensure inter-institutional coordination and efficacy.

The geographical extent and customary tenure characteristics of Solomon Islands are not suited to addressing resource management in a purely centralized fashion despite this being the current institutional architecture and pattern of fiscal support (concentrated at the national level). A more realistic governance role for national government may be to seek to maintain an over-arching responsibility for national strategic policy development and coordination, while ensuring that the disparate provincial, community and NGO activities are collectively capable of achieving national needs and priorities (McDonald 2006).

2.1.4. Interactions between levels

While the potential roles and needs for governance at the various levels are becoming clearer, all this will be of little value if the system does not mesh or link between levels and, for that matter, between sectors. Though perhaps the area that has received the least attention the ARDS (2007) does provide clear guidance:

“This can be done through improved linkages between provincial governments and rural communities, as well as central agencies [national government] and provincial governments. In the short- to medium-term, provincial governments must have clarification of their specific responsibility for service delivery. Their capacity to implement these functions should be made adequate. And all partnerships with sector agencies (at national level) and with service providers (community-based or private sector at the local level) should be strengthened. Resource transfers to provincial governments would be increased as their capacity for service delivery is built. Progress is expected to be uneven in different provinces, and support would have to be tailored to their respective situation and needs.”

Because of the cost involved in improving government’s service delivery, particularly in remote areas, reliance will have to be placed on strengthening partnerships among public sector agencies, the private sector, and nongovernmental organizations (ARDS 2007, MFMR

2010). The pursuit of such a strategy requires a commonly agreed target and clear demarcation of the roles and responsibilities of partners involved.

An important consideration in this process is to ensure that support is tailored to the different situations and needs of the various provinces (ARDS 2007), and linkages are built in a balanced way such that support to provinces is commensurate with the increased capacity of provinces for service delivery. This must also be in accord with community and provincial capacity to participate in planning to guide the flow of support (Cox and Morrison 2004).

2.2. Emerging policy

In addition to the National Plan of Action (NPoA) which was developed by SIG to meet the requirements of the Coral Triangle Initiative (MECM/MFMR 2009), and has received cabinet endorsement, two pieces of legislation relevant to coastal resource management have been developed in recent years. The Fisheries Management Bill and the Protected Areas Act 2010.

2.2.1. Fisheries Management Bill (2008)

The Fisheries Management Bill is currently undergoing an extended process of consultation and revision and is expected to be presented to parliament some time in 2011. Based on the 2008 draft circulated for comment there are some important and novel features:

- Emphasis on sustainable management
- Protection of the ecosystem as a whole
- Precautionary approach to the management and development of fisheries
- Regard for customary rights
- Promotion of broad and accountable participation in management

It appears that the Bill seeks to achieve a nested system of governance that respects and promotes customary resource ownership and encourages the development of Community-Based Fisheries Management Plans (CBFMP) by customary owners.

The CBFMPs would be part of a nested policy and institutional framework in which these local plans would be subject to Provincial Ordinance where these exist (or where powers are delegated to the Provincial Government by National Government). These, in turn, would be subject to regulations and Fisheries Management Plans at the National level. The intent seems to be to allow powers to be delegated for decentralized management while maintaining central control and responsibility where this is not possible.

Under the Fisheries Management Bill, customary owners will be able to apply for the designation of an area under a CBFMP. The Permanent Secretary, in consultation with the Provincial Government, would consider approval of the agreement that makes provision for the demarcation of the area, definition of customary rights, community fisheries management plan and details of penalties, monitoring and the provision of technical assistance by third parties.

The Bill also seeks to allow the creation of Marine Protected Areas (MPAs) at the request of customary fisheries resource owners. As with CBFMPs, these MPAs must not contravene existing fisheries plans and must be developed in consultation with relevant local and provincial stakeholders.

2.2.2. Protected Areas Act (2010)

The Protected Areas Act was passed in March 2010 after an extremely short consultation period. The process of consultation for drafting the regulations is currently under way. The Act makes provision for areas deemed to “require[s] special measures to be taken to conserve biological diversity” or possessing “significant genetic, cultural, geological or biological resources” to be declared a Protected Area and gazetted accordingly. The Act allows for Community Conserved Areas insofar as “the owner of any area, including any non-governmental organisation managing a conservation area, may apply to the Director for the area to be declared by the Minister as a protected area”. The draft regulations make special mention of Marine Protected Areas and include a category “Resource Management Area” which allows for “ecologically sustainable uses of natural ecosystems and resources for the benefit of customary owners and dependent local communities”.

The Act seems to provide support for local communities wishing to ensure legal status of local management plans however provisions in the draft regulations, such as the application process, boundary markers and requirements of a management committee, may prove too onerous for many interested communities.

2.3. Practical experiences in coastal resource management

2.3.1. Field experiences

The last 10 years has seen more than 90 community level, and recently district or region level, resource management experiences piloted by NGOs in Solomon Islands from which a large number of lessons remain to be learned. Prior to that, resource management tended to be motivated by external (international) conservation objectives and the approaches were expensive and often led to substantial disappointment or even conflict (Foale 2001, Govan 2009). In more recent years, these approaches have been gradually refined and re-oriented towards meeting community needs, either concurrently with external conservation objectives, or based on local resource or development concerns (Govan 2009, Boso et al. 2010).

Reports of successful local planning and implementation of coastal resource management are increasing. To date however, little attention has been focused on how these approaches could be scaled up to provincial and national levels. Issues include the expected roles of provincial and national stakeholders, and the financial suitability (or sustainability) of local approaches for adoption by national or provincial government.

2.3.2. National, multi-stakeholder and cross-sectoral planning

Over the last 10 years, a number of initiatives have sought to encourage collaboration and coordination across the government ministries and NGOs. These include the development of the National Biodiversity Strategy and Action Plan (NBSAP) and the Rapid Resource Appraisal conducted by TNC and other partners. More recently the MFMR has used multi-stakeholder meetings to develop policy relating to the management of marine and coastal resources including the Coastal Community Fisheries Strategy (MFMR 2007), Solomon Islands National Strategy for the Management of Inshore Fisheries and Marine Resources (2010-2012; MFMR 2010), and the National Fisheries Bill (2009-2010). The most enduring of these initiatives is the Solomon Islands Locally Managed Area Network (SILMMA), which has brought together representatives from NGOs, MFMR, MECM and some communities since 2003.

In 2007, a joint initiative between the MFMR and SILMMA produced an agreement with NGOs on “Proposed principles and best practice guidelines for a Community Based Resource Management in Solomon Islands” (MFMR 2007). This document, amongst other things, articulates the responsibility of the MFMR to coordinate the program to deliver CBRM across the country. It also recognizes that strong partnerships with NGOs will be required to implement the program on the ground.

Most recently, a wide range of stakeholders were brought together in a series of workshops and meetings guided by a National Coordinating Committee, and convened and chaired by MECM and MFMR, to develop a National Plan of Action (NPoA) for the implementation of the Coral Triangle Initiative within the Solomon Islands. Workshop participants ranged from SILMMA members and project and donor stakeholders to government representatives from the Prime Minister’s Office, Foreign Affairs, Councils of chiefs, Provincial Government, Agriculture and Lands, Planning. The resulting NPoA document represents the broadest stakeholder input to date on potential approaches to implementing Integrated Island Management (MECM/MFMR 2009).

These two strategic documents, one of fisheries origins (MFMR 2010) and the other with a more environmental focus (MECM/MFMR 2009), both emphasize the importance of multi-scale governance and multi-sector approaches, and both consider community-based management as a fundamental pillar in future resource management initiatives.

2.3.3. Provincial natural resource management networking

Recent approaches to CBRM in Solomon Island have tended to take place in clusters of communities or sites with networking and information exchange mainly restricted to this local level (e.g. Roviana, Marau, Kia and Vella Lavella communities). Moves toward provincial level networking commenced in 2008, and are most advanced in Central Province with the Gela, Russell Islands and Savo Natural Resources Management Network (GERUSA). This network was formed under the auspices of the Central Province Government with the participation of provincial departments including fisheries, agriculture, tourism and environmental health (SIDT/FSPI 2008). Provincial networking is at various stages of initiation in Malaita, Western Province and Choiseul (Pita 2010, Game et al 2010).

3. Design principles for participatory management of natural resources

To achieve successful coastal resource management in Solomon Islands, it is instructive to bear in mind the “design principles” for long-enduring institutions for participatory management of natural resources as proposed by Elinor Ostrom (1990, 2005) and presented in Box 2.

Box 2: Design principles derived from studies of long-enduring institutions for governing sustainable resources.

1. **Clearly Defined Boundaries** The boundaries of the resource system and the individuals or households with rights to harvest resource units are clearly defined.
2. **Proportional Equivalence between Benefits and Costs** Rules specifying the amount of resource products that a user is allocated are related to local conditions and to rules requiring labor, materials, and/or money inputs.
3. **Collective-Choice Arrangements** Most individuals affected by harvesting and protection rules are included in the group who can modify these rules.
4. **Monitoring** Monitors, who actively audit biophysical conditions and user behavior, are at least partially accountable to the users or are the users themselves.
5. **Graduated Sanctions** Users who violate rules-in-use are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other users, from officials accountable to these users, or from both.
6. **Conflict-Resolution Mechanisms** Users and their officials have rapid access to low-cost, local arenas to resolve conflict among users or between users and officials.
7. **Minimal Recognition of Rights to Organize** The rights of users to devise their own institutions are not challenged by external governmental authorities, and users have long-term tenure rights to the resource.

For resources that are parts of larger systems:

8. **Nested Enterprises** Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.

Sources: Ostrom (1990, 2005)

The design principles most relevant to successful management at the community level in Solomon Islands include the definition and recognition of boundaries, participation in decision-making, advertising the costs and benefits of participating, assessing the desirability of local monitors and the existence of appropriate sanctions and conflict resolution mechanisms. The current extent of application of these principles in Solomon Islands is best left to the forthcoming review of in-country CBRM experiences, an activity planned as part of NPoA actions (MECM/MFMR 2009) and fulfilling a recommendation of the ARDS (2007):

Priority actions III.8. Identifying successful community-based marine resources management initiatives, review lessons and building capacity to expand those initiatives

3.1. Building a nested system or “linking the levels”

Point number 8 of the Ostrom principles, relating to the organization of management into appropriate layers or nested enterprises, is particularly relevant when devising a national approach to Integrated Island Management in Solomon Islands. Principle 2 is also relevant to achieving this end in that benefits and costs or obligations of implementing such a nested system of governance will have to be clear and judged acceptable to all stakeholders. In accordance with Principle 7 it is important that institutions ranging from communities to provincial government implementing management in this nested system must be officially, if not legally, recognized while not restricting communities, districts or provinces in their ability to develop or adapt the most appropriate structures for their cultural or geographic setting.

The nested system of governance alluded to is laid out in the Fisheries Management Bill and is implicit in the ARDS (2007), which suggests a path to improving rural service delivery and resource management through strengthened local-provincial government relationships and community participation, a schematic interpretation is provided in Figure 2. This approach embodies the long announced, and much belated, government decentralization² process in Solomon Islands whose history dates back to the drafting of the Provincial Government Act in 1981, which was re-enacted in 1997 (Cox and Morrison 2004).

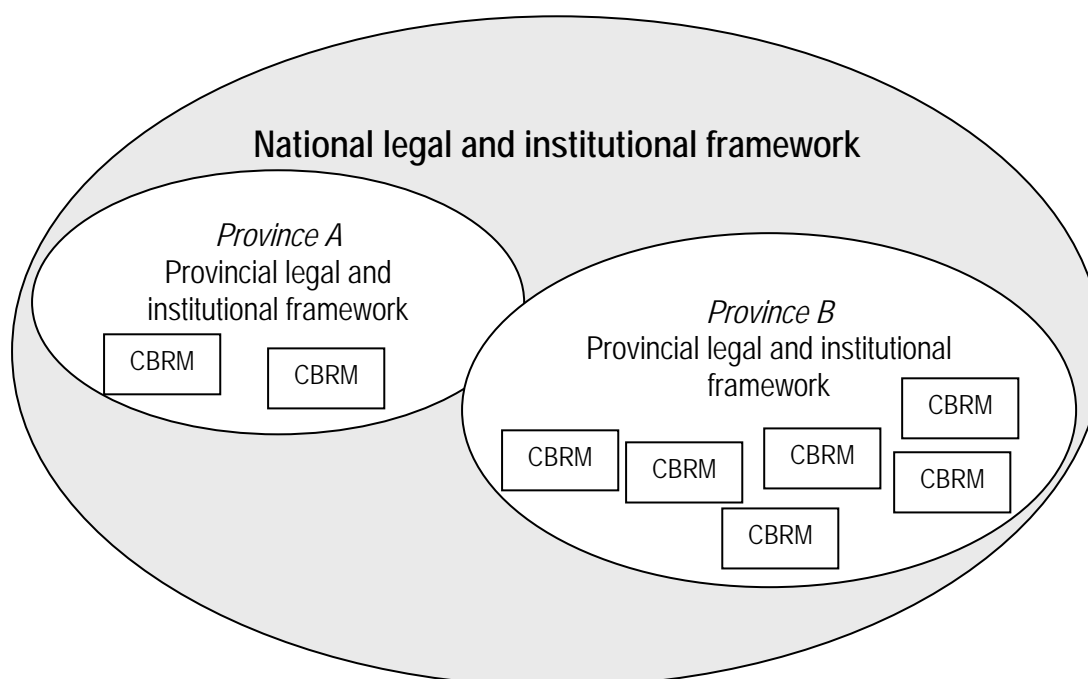


Figure 2: Nested system of governance to support community-based resource management (CBRM).

² A commonly cited principle for decentralization of governance is to aim for “as much local management as possible, and only so much government management as necessary”. This is known as the subsidiarity principle (Berkes et al. 2001).

3.2. Integrating the sectors or “horizontal coordination”

Integrated Island Management is likely to require co-ordination amongst the ministries of fisheries and environment, both of whom have resource management responsibilities but also, at a minimum, amongst these two ministries and forestry, finance, planning and provincial development agencies. Integrated Island Management faces a major challenge in that centralized government is highly sectoralised, and until recently, few mechanisms existed for inter-agency or horizontal communication and coordination. The coordination of meaningful IIM initiatives across such a wide range of sectors will require considerable thought and investment.

Effective mechanisms for horizontal coordination will need to function not only at the national but also provincial and community levels (Figure 3). However, the sectors are likely to be managed by offices with relatively close proximity (geographically at least) at the provincial level and in a more or less integrated fashion within communities. In addition, given the current budget strictures, particularly at provincial level, it is likely that relatively few personnel will be available to operate across multiple sectors. These financial constraints are discussed further below.

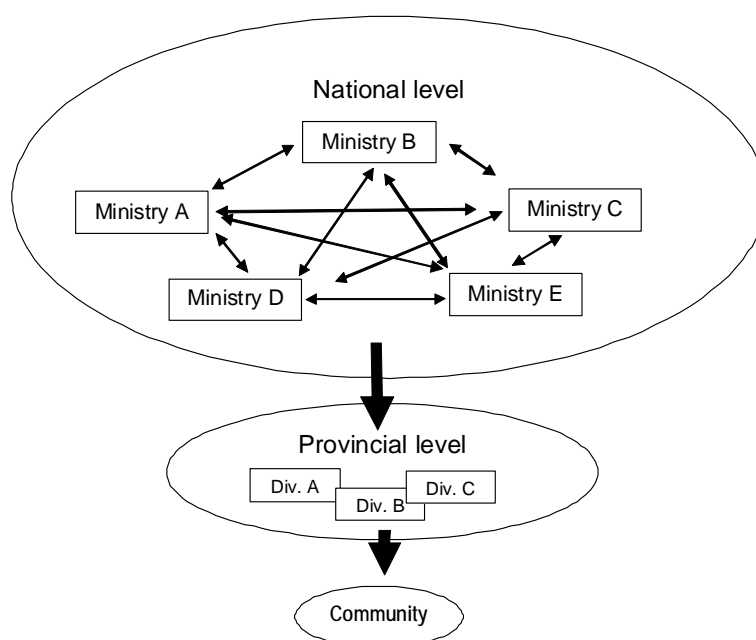


Figure 3: Diagram representing the horizontal coordination between sectors at different levels or scales which assumes sectors are likely to be managed by offices with relatively close proximity at the provincial level and in a more or less integrated fashion within communities.

3.3. Costs – fiscal and transaction

The issue of cost is perhaps the most crucial one for Solomon Islands coastal governance. A model of governance of coastal resources using centralized management (in this case from the responsible ministries based in Honiara) involves relatively low initial costs for design of approaches and law-making, while higher costs are associated with implementation and enforcement. There are several reasons why centralized approaches are unlikely to function in Solomon Islands. These include customary land tenure and rights, the lack of funds for

enforcement at provincial and local levels and the diversity and remoteness of many communities.

De-centralized or co-managed approaches are expected to have greatly reduced costs for implementation and enforcement over the long term (at least for government). This makes these approaches more suitable where long term funding is not guaranteed, and where resource rights lie with local stakeholders. However, the initial costs or investment required for design and decision making are higher as they require the participation of large number of stakeholders (see Table 1).

Table 1: Transaction costs in centralized and co-managed systems (Kuperan et al. 2008)

Resource management activities	Centralized management	Co-management
Information seeking	Low	High
Collective fisheries decision making	Low	High
Resource distribution among users over time	High	Low
Monitoring, enforcement and compliance	High	Low
Resource maintenance	High	Low

The flow of appropriate finances to stakeholders expected to implement and support IIM is a critical consideration in the development of the framework for governance of coastal resources. The integrated and community-based approach proposed in Solomon Islands will have costs that will not be directly measurable in financial terms. Indeed, the majority of investment in local management will be in the form of time and social capital. Encouraging collaborative approaches and interactions between stakeholders has the potential to save money but increase the effort required. These types of costs are known as “transaction costs”. The long term success of the IIM framework will depend on its actual and perceived, fiscal and transactional cost-effectiveness.

3.4. Stakeholder roles and determining priority areas for support

The design of appropriate coastal resource management systems should consider the capacity of each stakeholder to effectively and sustainably perform management functions and allocate roles accordingly. A comprehensive list of potential roles for stakeholders in community-based fisheries co-management is provided in Table 2.

Table 2: Potential roles of different stakeholder groups in community-based fisheries management (based on Pomeroy and Rivera-Guieb 2006).

Community-based fisher groups	National government and national agencies	Local government	Others
<ul style="list-style-type: none"> - Identification of issues and concerns of the community - Mobilization and leadership of co-management activities - Participation in research, data gathering and analysis - Participation in the planning, design and implementation of co-management activities - Community-based enforcement and self-regulation - Monitoring and evaluation - Advocacy to lobby for changes in or development of policy - Establish a people's movement for participation and change 	<ul style="list-style-type: none"> - Provide enabling legislation to authorize and legitimize the right to organize and to make and enforce co-management - Determination of form and process and provision of decentralization - Recognition of legitimacy of community-based informal management systems - Address problems and issues beyond the scope of local co-management arrangements - Provide technical assistance - Provide financial assistance - Ensure accountability of co-management through overseeing local arrangements and dealing with abuses of local authority - Conflict management - Appeal mechanism - Backstopping local monitoring and enforcement mechanisms - Applying regulatory standards - Research - Training and education - Coordination role to maintain a forum for local co-management partners to interact - Gatekeeper in case the local co-management partners do not act upon their responsibility - Determination of allocation of management functions 	<ul style="list-style-type: none"> - Supporting community involvement in community-based co-management - Approving local regulations and ordinances - Enforcement of regulations - Appeal mechanism - Providing technical assistance and staff - Providing financial assistance - Backstopping community-led functions, activities and mechanisms - Provide and/or support conflict management mechanisms - Ensure legitimacy and accountability of co-management - Engage in multisectoral and inter-local government unit collaboration - Facilitate and coordinate co-management planning and implementation - Provide a supporting environment for partner dialogue - Institutionalize co-management for fisheries and coastal resources in local waters 	<p>Change agents (non-governmental organizations, academic institutions, research institutions, development agencies):</p> <ul style="list-style-type: none"> - Catalyst of change - Act as an intermediary between communities and external institutions, such as government, the general public and businesses - 'Spark' endogenous change 'from within' - Facilitation <p>Business people, community-based groups, part-time and seasonal resource users</p> <ul style="list-style-type: none"> - Identification of issues and concerns of the community - Participation in planning and implementation - Providing incentives for certain behaviour - Dissemination of information - Fostering participation - Conflict management - Facilitation

The roles of different stakeholders often vary across phases of CBRM implementation. Table 3 presents labels used by different agencies for the different phases of implementation of resource management

Table 3: Phases distinguished by various authors in implementing CBRM. Note that all these phases apply to centralized and co-managed approaches. The phases outlined by Arthur and Howard (2005; shaded below) explicitly acknowledge the national context within which local co-management arrangements operate.

Integrated Coastal Management	Adaptive management of small scale fisheries	Community-Based Adaptive Management of LMMAS	Fisheries co-management process
<i>Ehler (2003)</i>	<i>Andrew et al. (2007)</i>	<i>Govan et al. (2008)</i>	<i>Arthur and Howard (2005)</i>
			Define national / provincial policy
Initiation	Diagnosis / defining management constituency	Initial assessment	Implement national / provincial policy
Planning		Design and planning	Decide management plans
Adoption	Implementation	Implementation (of plan)	Implement management plans
Implementation	Adaptive management	Implementation (of plan)	Implement management plans
Monitoring	Adaptive management	Implementation (monitor)	Implement management plans
Adaptation and reformulation	Adaptive management	Ongoing adaptive management	Evaluate management plans
			Evaluate national / provincial policy

For the purposes of assessing potential models for IIM in Solomon Islands, this study identifies five phases in the implementation CBRM. These phases, presented below, are based on Arthur and Howard (2005) and Halls et al (2005). The details are provided by Ehler (2003), as this is more suited to more wide scale integrated management and has previously been used to by Lane (2006) to analyse the Solomon Islands context. The phases include 3 at national and provincial level (1, 2, 6) and 3 at local level (3, 4, 5) (Figure 3) and are as follows:

- 1. Define national / provincial policy:** Define policy and legal frameworks to support CBRM at national and provincial levels
- 2. Implement national / provincial policy:** Implement strategy for communicating with communities, gathering information, and selecting communities for different types and levels of support
- 3. Design local management plans:** Assess information to prioritise issues, stakeholders and potential management tools and institutions into a draft management plan
- 4. Implement local management plans**
 - a. Adoption:** Achieve stakeholders agreement / acceptance of plan
 - b. Implementation:** Plan put into action
 - c. Monitoring:** Gather information on management plan effectiveness
- 5. Evaluate local management plans:** Review effectiveness and impact of plan and adapt if necessary
- 6. Evaluate national / provincial policy**

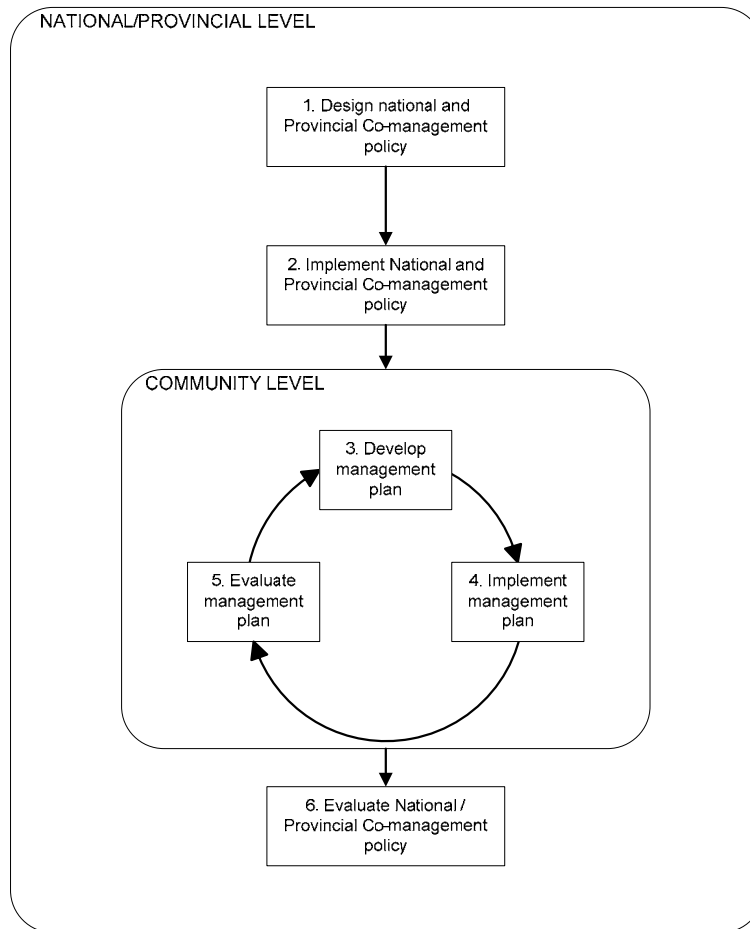


Figure 4: Diagrammatic representation of co-management system sequence and phases adopted in this study (adapted from Arthur and Howard (2005) and Halls et al (2005))

Key questions to be explored for the design and implementation of IIM in Solomon Islands are:

1. What are the roles of regional, national and sub-national agencies in the different phases of a community driven resource governance approach?
2. What is an appropriate, and financially sustainable, environmental governance framework within the context of national budgetary and policy processes?
3. What are the priority activities?
4. What information needs to be supplied and what are the capacity building activities required for decision-makers?

4. A case study from Lau, North Malaita

4.1. Introduction to the case study

A WorldFish Center research project on the resilience of small-scale fisheries in Western, Isabel and Malaita provinces of Solomon Islands and funded by ACIAR, formed the basis of this case study which was undertaken with the support of SPREP. The target for the SPREP funded work was the Malaita component of the project which provides a useful case study upon which to base the design of a model for the broad-scale implementation of CBRM. The WorldFish approach employed adaptive learning, guided by a conceptual framework for Participatory Diagnosis and Adaptive Management (PDAM) of small-scale fisheries (see Table 3 above). The implementation framework is currently being tested as part of the WorldFish approach to small-scale fisheries management in developing countries (Andrew et al. 2007, Boso and Schwarz 2009).

The CBRM implementation project is in Lau Lagoon, North Malaita and commenced in October 2008 in response to a request from the communities to the MFMR. The study region consists of two relatively large population centres, Funa'afou and Foueda, comprising more than 600 people (excluding the large Honiara-based component of the population) across 10 artificial islands.

Analysis of the Lau project covered a two year period from October 2008 to October 2010 and has been divided into four six-month semesters to investigate facilitate a more detailed temporal analysis (Table 4). Throughout this time, WorldFish project staff meticulously documented the financial costs and human resources employed for project activities in the two community clusters (further details on the methodology are provided in Annex 2). The two clusters chose to independently develop management plans and only felt that they were at a stage of being able to come together to share progress and concepts after the project had been running for almost two years. At the end of the data collection period, one of the community clusters had implemented their plan and were entering into adaptive management. The second cluster had recently identified that a further round of consultations were necessary before their management plan was finalized and implemented.

Table 4: Timeline of activities in the Lau case study.

Semester 1	October 2008	Scoping visit to Lau communities. Project extent determined
	December 2008	Visit to Cluster 1 by change agent (community member based in Honiara) – “fishing” task force and/or committee at Cluster 1 formed*
	February 2009	Community discussions and focus group discussions at each of the two clusters.
Semester 2	May 2009	HH surveys and community planning. Diagnosis phase completed. Formation of committee at Cluster 2.
	July 2009	Youth awareness meeting and Cluster 2 committee meeting. Community wide meeting and consultation carried out by the two respective committees. Training in CPUE monitoring for Cluster 1.
	July 2009	Start of monthly community fish catch monitoring with Cluster 1. Some management rules adopted by Cluster 1.
Semester 3	October 2009	Project implementing partners (WorldFish, FSPI and MFMR) meet with the premier of Malaita; information awareness.
	Late 2009	Instance of rules being enforced, fine and gear confiscated for fishing closed area at Cluster 1, draft management plan complete.

Semester 4	Early 2010	General community meetings (internal) include discussion of fishing and management plan rules at both clusters.
	February 2010	Community and committee meeting facilitated without external support to discuss Cluster 2 management plan rules.
	May 2010	Implementation partners, MFMR and WorldFish, meet with members of provincial executive to discuss how CBRM initiatives can be supported through the Malaita Provincial Fisheries Development Plan.
	June 2010	Both community clusters hold Marine Resources Management Planning Meetings. Cluster 1 decided to implement management plan.
	August 2010	Women's resource management workshop. Reef owners meeting and monitoring training and discussion (CPUE). The committees for each cluster, along with other reef owners, jointly discussed management activities for the first time. Draft management plan of Cluster 2 requires further tribal consultation.

To answer the questions posed at the end of section 3.4, regarding the design and implementation of broad-scale CBRM in the Solomon Islands, we present details of the three considerations using the experience from the Lau case study:

1. **Stakeholder analysis:**
 - Who are the potential stakeholders at each level of activity?
 - How can stakeholders interact between and within levels?
2. **Financial and transaction cost analysis:**
 - What are the transaction costs involved?
 - What are the major cost constraints?
 - What are the minimum costs?
 - What is the existing fiscal support for stakeholders at the various levels?
3. **Implications of the case study for resource governance:**
 - What are the salient costs and staffing needs?
 - What are the key capacity building activities and information support requirements?
 - What are the likely minimum approaches and activities required for successful implementation?

4.2. Stakeholder analysis

Table 5 summarizes the local, provincial, national and international stakeholders that the project has interacted with. Note that MFMR and the NGO FSPI are formal contracted partners to the WorldFish Center, ACIAR-funded project .

Table 5: Identified stakeholders within a) the communities b) provincial government c) national organizations including NGO's based in country and d) international organisations not based in country.

Local / Lau stakeholders	Role
Funa'afou Committee Chairman	Contact point for facilitators; lead community meetings; facilitate community discussions and decisions; enforce management plan rules
Foueda Committee Chairman	Contact point for facilitators; lead community meetings; facilitate community discussions and decisions; enforce management plan rules
Funa'afou Committee Secretary, (also the Youth Leader)	Contact point for facilitators; community management plan monitor; logistical support for calling meetings; inform executive committee and community on resource management happenings; enforce management plan rules
Foueda Committee	Contact point for facilitators; recording of meeting minutes; inform other

Secretary	committee members of meeting times and other project activities
Executive Committee members for Funa'afou (also the community leaders)	Make decisions based on information provided; important in getting community support; ensuring better flow of work as the point of contact; enforcement of community management plans
Key community youth members on Niuleni and Funa'afou	Assist secretary to collect fish data (monitoring)
Std 6 primary school teacher	Spreading of information to children through classroom teaching; analysers of monitoring results
Women's groups	Spreading of information to other women and children in community, caterers, catering
Fishermen	Harvesters of marine resources; enforcers of management plan rules
Fisherwomen	Mainly reef gleaners but fishers as well; influential in getting support for resource management in community
Resource owners	Owners of fishing grounds; endorsement of management plan rules and implementation; initiators and enforcers of tabu rules
Resource users	User activities on fishing grounds; need to have buy-in to management plan rules
Elders	Provide advice on rules in management plan
Saua seaweed project team	Provide boat transport for team
Lau 'Bush' people	Users/fishers

Provincial stakeholders	Role
Malaita Province Premier	Provides provincial support for project work in the Province
Provincial executive	Provides provincial support for project work in the Province
Provincial fisheries officers (provincial government staff)	Logistical support; technical support in the field; development of improved capacity for doing CBRM in the province; provision of Fisheries vehicle and boat for transport use
Fuel providers (Island Fuel Depot and others)	Supply of fuel for vehicle and boat use
Privately run transport providers	Provision of vehicle for transport to Lau area
Auki Motel	Auki accommodation for team when travelling to and from Lau

National stakeholders	Role
MFMR staff: PS	Directional leadership, policy setting
MFMR staff: Inshore fisheries officers	Project support, MFMR awareness raising, technical support in the field
MFMR staff: Provincial Fisheries Officers (National staff)	Project support, Provincial awareness raising
FSPI staff	Project support; awareness raising nationally and within provinces
Lau change agents / Community advisors	Advise communities on working partnerships and ways forward; review of appropriate community reports; contact point for passing of information to Funa'afou through wireless radio
SILMMA coordinator	Database of information on CBRM sites and partners in the country;

	coordination with NGOs and other partners working nationally and regionally on resource management
Project officers (in-country WorldFish)	Currently carry out bulk of facilitation, surveys, training, liaison and reporting as well as capacity building of provincial officers
Technical advisers : In-country WorldFish scientists	Majority of technical support to project.; management of adaptive learning; strategic planning; networking and relations with national and international stakeholders
Technical advisers: occasional regional and international	Bringing in lessons from outside; assisting evaluation of progress; linking theory and practice

International stakeholders	Role
Locally Managed Marine Area network (LMMA)	Sharing experiences, training and support of national network (SILMMA)
Big International environmental NGOs	Support of community conservation activities elsewhere in the country and sharing of experience and training
Regional technical agencies – SPC	Support to MFMR on fisheries issues
Regional technical agencies – SPREP	Support for some aspects of LMMA and this study

4.3. Financial and transaction costs

The expenses incurred by the project during implementation activities, excluding organization overheads and staff salaries, are summarized in Table 6. The bulk of costs (65%) are related to travel and living allowances for staff. Of this, Honiara-based government and NGO staff (MFMR, WorldFish and FSPI) accounted for around 93%. The remaining expenses were associated with community meetings, group discussions or interviews; largely the cost of catering and refreshments.

Table 6: Project expenses of major activities in implementing the Lau “project” in Solomon Islands dollars (1 USD = approximately 7 SBD). Lookout refers to general observations made by the communities that were not part of formal project processes. Travel costs are associated only with powered transport.

Stakeholder	Lookout	Downtime	Large meetings > 4 people	Meetings <= 4 people	Other	Travel	Grand total
Community committee	-	-	710	35	50	-	795
External change agents (e.g. community members based in Honiara)	-	-		-	-	-	?*
Community at large	-	-	9,290	0	-	-	9,290
National fisheries officers	-	0	1,872	635	-	17,038	19,545
Others (observer, catering)	-	-	50	-	16,800 ^a	2,035	18,885
Other national government officers	-	0		-	-	-	0
Other provincial officers (boat drivers)	-	-	1,000	-	-	1,977	2,977

Project officers (NGO)	-	525	4,996	1,985	45	35,121	42,672
Provincial fisheries officers	-	0	1,492	800	0	3,706	5,998
Resource users (fishers, etc)	-	-	0	-	50	-	50
Technical advisers (NGO staff)	-	0	3,524	535	-	20,940	24,999
Grand total	-	525	22,934	3,991	16,945	80,816	125,211

* Time and costs incurred by at least one Honiara based change agent not collected

^a Catering carried out for one workshop by community members

The time spent implementing various CBRM activities has been summarized by stakeholder and by ‘activity type’ in Table 7. It is apparent that the major time investment of the community occurred when holding a single large community meeting or during consultation between community members and the committee. Other major time investments were staff engagement in meetings and interviews with the communities and travel to and from the site.

Table 7: Staff and community time, in hours, occupied by major activities in implementing the Lau project. Lookout refers to general observations made by the communities that were not part of formal processes.

Stakeholder	Lookout	Downtime	Large meetings > 4 people	Meetings <= 4 people	Other	Travel	Grand total
Community committee	*		158*	2			160
External change agents							?^a
Community at large			3,253 ^b	88			3,341
National fisheries officers		31	54	41		85	210
Others (observer, catering)			8		450 ^d	21	480
Other national government officers							
Other provincial (boat drivers)			102			162	274
Project officers (NGO)		52	172	83	16	139	462
Provincial fisheries officers		17	80	53	1	87	238
Resource users (fishers, etc)	*		3				3
Technical advisers (NGO staff)		38	102	2		96	238
Grand total		138	3,931 (678^c)	269	467	590	5,404 (2,151^c)

* Committee, resource users and community carried out 60 person hours of monitoring (landings data) and 43 person hours of meetings outside of the timetable for major project activities.

^a Time and costs incurred by at least one Honiara-based change agent not collected

^b Community meeting in which 80% of Niuleni and Funa'afou estimated to have attended (including women and children)

^c Excluding community meeting

^d Catering carried out for one workshop by community members

Owing to the high travel costs associated with working in rural Solomon Islands, expenses associated with engagement of the various stakeholders are highly dependent on their location. For example, the deployment of provincial fisheries officers based in Malaita incur approximately a quarter of the expense per hour when compared to Honiara-based officers, largely due to their respective travel costs. Although the attribution of costs to specific stakeholders within the context of group activities is imprecise, the closer the stakeholder resides to the site the lower the associated expenses of an action (Table 8).

Table 8: Costs associated with activities of various stakeholders (excluding salaries) in Solomon Island dollars per hour. Figures are presented for the total deployment time and for time actually spent at the site (i.e. excluding travel time).

Stakeholder	Geographic base	Cost / total time	Cost / (time - travel time)
Community at large	Community	2.8	2.8
Community committee	Community	5.0	5.0
Resource users (fishers, etc)	Community	16.7	16.7
Other provincial (boat drivers)	Provincial capital	10.9	26.7
Provincial fisheries officers	Provincial capital	25.2	39.9
External change agents	National capital	NA	NA
National fisheries officers	National capital	93.0	156.0
Project officers (NGO)	National capital	92.3	132.0
Technical advisers (NGO staff)	National capital	105.1	176.4 ^a

^a The apparently higher cost of in-country technical advisers compared to national fisheries officers and project officers is a function of the way data was collected. Some group costs (e.g. small purchases) were sometimes attributed to the team leader. There is no material difference in costs of deployment in the field.

The total costs in years 1 and 2 were similar (Table 9), although staff costs and staff time were less in year 2 than in year 1 (Table 10).

Table 9: Project expenses related to major stakeholders over 2 years in Solomon Islands dollars (1 USD = approximately 7 SBD)

Stakeholder	Year 1	Year 2	Total
Community committee	85	710	795
External change agents	0	0	0
Community at large	100	9,190	9,290
National fisheries officers	14,148	6,080	20,227
Other (e.g. observer, catering)	1,785	16,900 ^a	18,685
Other national government officers	0	0	0
Other provincial (boat drivers)	1,487	1,690	3,177
Project officers (NGO)	21,088	20,233	41,321
Provincial fisheries officers	5,054	1,834	6,888
Resource users (fishers, etc)	50	0	50
Technical advisers (NGO staff)	11,526	13,252	24,777
Grand Total	55,323	69,888	125,211
Grand Total (staff related only)	53,302	43,088	96,391

^a Catering carried out by community members on a paid basis. This falls slightly outside of our definition of staff and community categories as it is not an in-kind community contribution.

Table 10: Staff and community time occupied by major activities in implementing the Lau project over 2 years

Stakeholder	Year 1	Year 2	Total
Community committee	105	55	160
External change agents	0	0	0
Community at large	2,065	1,276	3,341
National fisheries officers	164	47	210
Other (e.g. observer, catering)	5	468 ^a	473
Other National government officers	0	0	0
Other provincial (boat drivers)	88	193	281
Project officers (NGO)	226	236	462
Provincial fisheries officers	152	86	238
Resource users (fishers, etc)	3	0	3
Technical advisers (NGO staff)	108	130	238
Grand Total	2,915	2,489	5,404
Grand Total (staff only)	737	691	1,428

^a Catering carried out by community members on a paid basis. This falls slightly outside of our definition of staff and community categories as it is not an in-kind community contribution.

The major project activities have progressed from information sharing (comprising discussions, awareness raising, surveys and rule discussion) towards collective planning. More recently, there has been a switch towards monitoring training and implementation, although information sharing and planning are still carried out (Figure 5 and Figure 6).

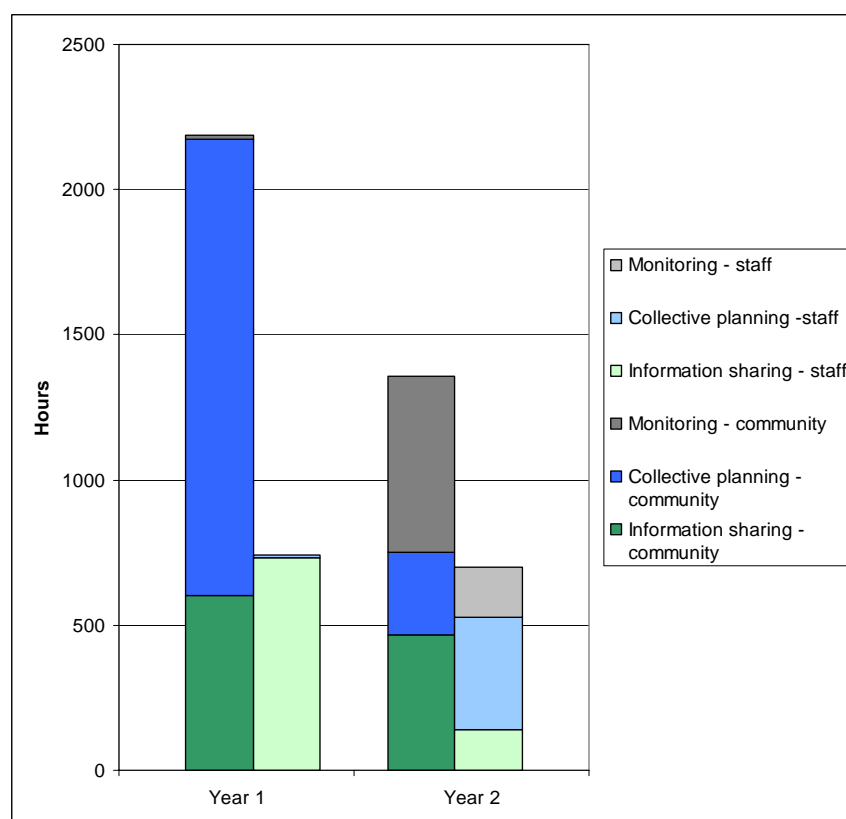


Figure 5: Staff and community time investment (in hours) separated by major activities in implementing the Lau project. Excludes time spent on paid catering by community members and office-based staff.

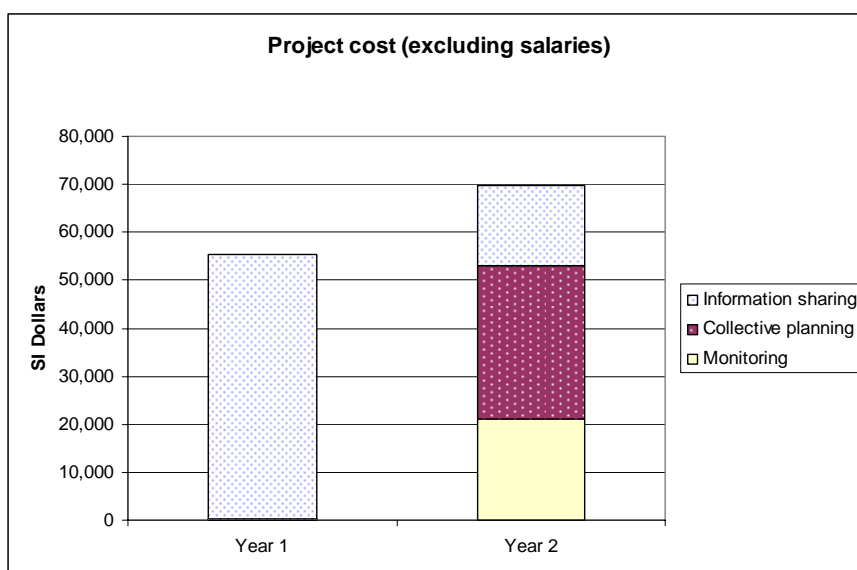


Figure 6: Project expenses related to major stakeholders over 2 years in Solomon Islands dollars (1 USD = approximately 7 SBD)

The cost of information sharing peaked in the second semester with the implementation of a household survey (Figure 7). The investment in time was high during this period (Figure 8), dominated by a collective planning meeting held with most of the community. Project and time expenses began to decrease after this peak into the third semester.

The peak in semester 4 is due to a particularly large activity at the end of year 2. This activity had multiple objectives which were not directly related to the implementation of CBRM³ however did include training for community members in indicator monitoring for the second community cluster. The additional activities associated with the WorldFish Resilient Small Scale Fisheries research project included awareness and training activities for the purpose of method development, resource monitoring and evaluation. We have not attempted to separate the core CBRM implementation costs from these activities.

³ The WorldFish research project has additional objectives of testing approaches to information exchange and researching community monitoring protocols over a range of community clusters. This means that some awareness and training activities for the purpose of method development and monitoring and evaluation, over and above the likely minimum needed to implement CBRM have been conducted. Rather than attempt to separate these activities from the core CBRM implementation we have chosen to include all.

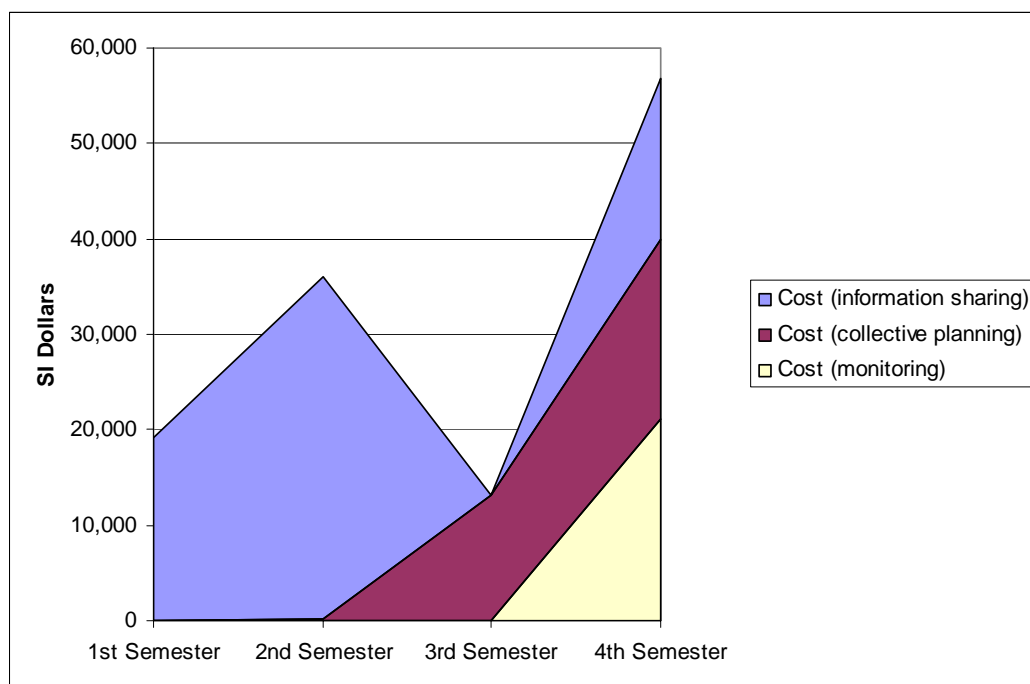


Figure 7: Project expenses related to major stakeholders over 4 semesters in Solomon Islands dollars (1 USD = approximately 7 SBD)

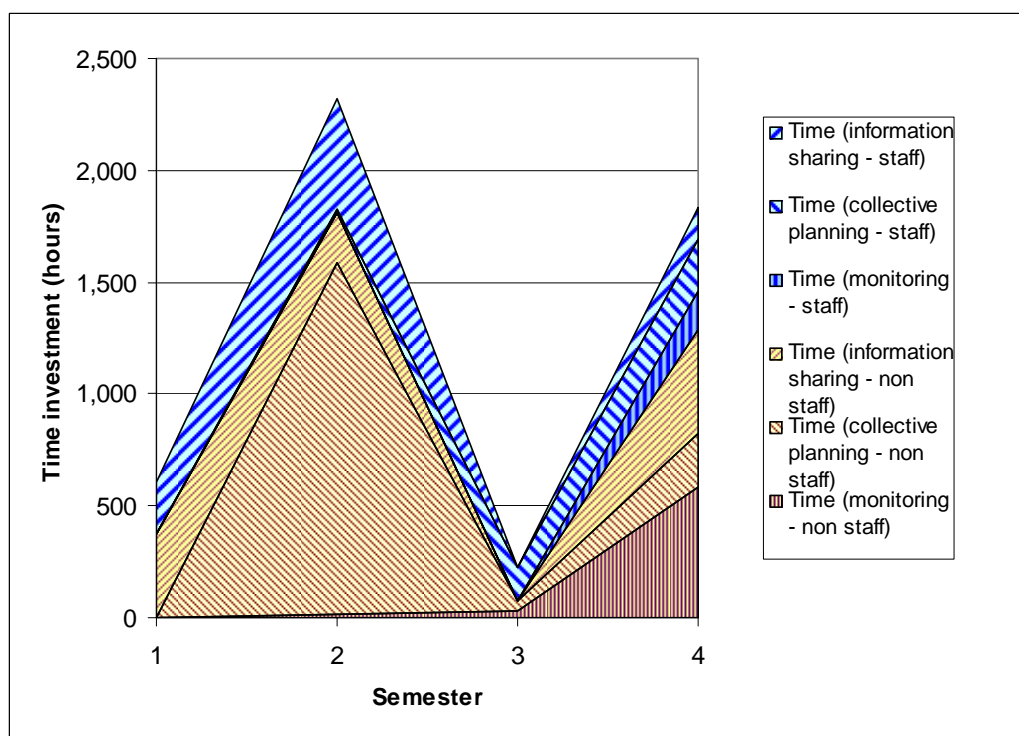


Figure 8: Staff and community time disaggregated by major activities in implementing the Lau project over 4 semesters. Excludes time spent by community members for paid catering.

4.3.1. Costs to implementing institutions

In this section, we have calculated direct and indirect costs, including salary costs over the two year period from 7th October 2008 to 7th October 2010, that are attributable to work carried out at these community clusters. Staff time invested was counted as total days dedicated to the project (i.e. when the staff are denied to other job activities). Staff costs were estimated for national and provincial government officers based on upper end government pay scale (Level 7), including all benefits, divided by 230 working days (including holiday and sick leave) = SBD \$202 / day. Other provincial officers, including drivers and support staff, were assumed to be paid at the national Level 1 pay scale. Staff costs for NGO project officers and international technical advisers were estimated at a representative organizational charge-out rate of USD \$50 / day and USD \$500 / day (Table 11).

Table 11: Estimated yearly cost of staff time inputs to the Lau project activities assessed for this study (SI dollars).

	Field or desk work	Days / year	Rate / day	Cost per year
National fisheries officers	Field	17	202	3,026
	Desk		202	0
Provincial fisheries officers	Field	24	202	4,183
	Desk		202	0
Other Provincial officers	Field	30	76	2,233
	Desk		76	0
Project officers (NGO)	Field	36	350	12,600
	Desk	40	350	14,000
Technical advisers (senior NGO staff)	Field	21	3500	73,500
	Desk	40	3500	140,000
Grand Total				\$250,506

Table 12 presents a estimated yearly cost for the project which includes all field activities and staffing. A figure of 40% of direct costs has been adopted to acknowledge the overheads and operating costs of supporting institutions. This figure was calculated based on information from national and provincial fisheries budgets and key NGO informants.

Table 12: Summary estimated yearly cost of implementing the Lau project (SI dollars) based on the case study data

	Yearly
Activity costs (transport, food, consumables, per diems)	62,606
Staff costs (salaries and benefits or charge out rates)	250,506
Total	\$313,111
Institutional costs (infrastructure, support staff etc) at 40%	125,245
Grand Total	\$438,356

4.3.2. Costs to the community

A cost benefit analysis between community investment in time and social burden compared to the benefits of management, will ultimately determine the sustainability of the approach. It is difficult to gauge these community investments through the methodology employed here. This is, in part, due to difficulties in recording occasional events related to management (e.g. fining a transgressor), and is combined with the difficulty in separating management activities from other day to day community activities.

The time invested by community stakeholders in project activities was documented and is reported in Table 13.

Table 13: Time invested by community stakeholders in the project activities over the 2 year period and as a yearly average (in hours and total in days)

Community stakeholder	Lookout	Large meetings > 4 people	Meetings <= 4 people	Travel	Grand Total	Grand Total (yearly average)
Community committee	36	158	2		195.5	98
External change agents	a	24a	a	a	24	12
Community at large		3,253 ^b	88		3341	1670
Resource users (fishers, etc)	24	3			27	14
Total (hours)	60^c	3,437	90	0	3587	1794
Total (in 8 hour days)	7.5	429.6	11.3	0.0	448.4	224.2

^a Time and costs incurred by at least one Honiara based change agent not collected

^b Community meeting in which more than 80% of Niuleni and Funa'afou are estimated to have attended (including women and children). Accounts for 1470 community hours and 60 committee hours. Also 3 days of meetings with 61 people in August.

^c CPUE monitoring included

The minimum estimate of community time invested in the process is around 224 person days per year. However, the bulk of this comprises of one large community meeting per year along with the activities of the community management committee.

Other transaction costs that are likely to be underrepresented in this analysis include:

- Informal discussions and follow-up by community members.
- Informal enforcement activities e.g. "Do you know that you are not allowed to fish in place x?"
- Reported confiscation of poacher's equipment.
- Activities and influence of Honiara-based "change agent" in local visits or when community members visit Honiara other than for one known 3 day trip.

4.4. Implications of the case study for resource governance

4.4.1. Information and capacity needs

The experience of project officers allows the identification of key information and capacity needs of the stakeholders at different stages of the management process (Table 14). Capacity needs are defined as stakeholder skills or tools that are beneficial to the process of CBRM implementation.

Table 14: Capacity and information needs of key stakeholders identified in the Lau project

Local / Lau Stakeholder	Information needs	Capacity needs
Resource Management Committees	<p>Natural resource management: Community management plan outlines and development process; adaptive management concepts and processes, basic biological concepts; management of target species and habitats; national and provincial fisheries regulations</p> <p>Institutional: roles of government and non-government stakeholders including SILMMA Network and other sources of advice; feedback from community members</p>	<p>Organizational skills – facilitation, running an association or committee</p> <p>Monitoring techniques suited to local plan; simple analysis techniques for monitoring results</p>
Key community members: school teachers; leaders not involved in committees; elders; women's groups; youth; fishers; resource owners and users .	<p>Natural resource management: National and provincial fisheries regulations; basic biological concepts; management of target species and habitats</p> <p>Institutional: Roles of government and non-government stakeholders; knowledge of other sources of relevant advice. Good understanding of the committee's progress in development of the management plan</p>	
Other communities outside of the management plan tribes (e.g. Lau 'bush' people).	Awareness of the existence of community management plans, the rationale behind the plan and the implications for these communities	

Provincial Stakeholder	Information needs	Capacity needs
Malaita Province Premier and provincial executive	Institutional: Awareness of and rationale for current CBRM activities in the province. To be informed and consulted on any plans for future activities	
Provincial fisheries officers (provincial government staff)	<p>Natural resource management: Details of community management plans; adaptive management processes</p> <p>Institutional: Roles of government and non-government stakeholders. Knowledge of how community plans can link to legislative assistance</p>	Basic biology and management of key species and habitats; participatory processes for CBRM; support for ongoing CBRM; able to assist with analysis of community monitoring efforts; skills in conducting biological and socioeconomic surveys [for longer term national monitoring]

National Stakeholder	Information needs	Capacity needs
MFMR staff: Permanent Secretary	Institutional: Status of project and CBRM activities in the country	Policy development, strategic planning
MFMR staff: Inshore fisheries officers (including provincially based)	Natural resource management: community management plans; adaptive management processes; basic biology and management of key species and habitats Institutional: roles of government and non-government stakeholders incl. other sources of advice	Training in CBRM facilitation according to their policies and strategies; conducting surveys; monitoring and evaluation
Change agents / community advisors	Stakeholder / project intent objectives and status; progress of community management plan development; resource management activities in community	
SILMMA coordinator (and network)	Institutional: Status of CBRM sites from the project	
Project officers (in-country WorldFish)	Natural resource management: Status of local CBRM initiatives; issues and needs. Community management plans; national and provincial fisheries regulations; adaptive management processes; basic biology and management of key species and habitats. Institutional: roles of government and non-government stakeholders including SILMMA Network and other partner organizations activities	Participatory tools; facilitation; skills in training / capacity building, liaison and reporting
Technical advisers (In-country WorldFish scientists)	Same as for project officers plus: Current information on government policies, strategies and plans; status of local CBRM initiative issues and needs; NRM and CBRM experiences and status elsewhere; stakeholders and institutional roles and responsibilities	Management and evaluation of adaptive learning, strategic planning, networking and relations with national and international stakeholders, mechanics of capacity building

International Stakeholder	Information needs	Capacity needs
Technical advisers: occasional regional and international	Status of NRM, CBRM and other emerging issues and lessons from outside the country	Evaluation of progress; linking theory and practice; policy development
Locally Managed Marine Area network (LMMA), Big International environmental NGOs, Regional technical agencies	Status and needs of national and local CBRM initiatives	Information exchange; networking; targeted research; policy development

4.4.2. Media for transfer of information

Different media formats have been developed during the wider ACIAR funded project. While there are other options available and used by other implementers (e.g. national radio programmes, drama) those that have been used to date in this project and were well received in the communities included:

- DVD's on natural resources in Solomon Islands and other community initiatives in Solomon Islands
- Workshops and power point presentations
- Brochures and handouts in language chosen by the community

- Posters
- Network (exchanges), only able to be used for key representatives owing to high associated costs

5. Lessons from the Lau case study for extrapolation towards implementing a national IIM approach

The case study has highlighted some important issues for consideration in the design of an approach to the spread of CBRM across Solomon Islands. The core CBRM activities are considered to be essentially the same as those required for the community level implementation of IIM. The major considerations are presented below under the headings: project activities, community activities, staffing, transport, institutional capacity and potential financial costs.

5.1. Project activities

The case study represents an example which, in addition to trialling the PDAM framework (Andrew et al. 2007) for implementing CBRM, had wider research objectives. These included identifying elements of resilience in small-scale fisheries, developing and testing community monitoring protocols over a range of community clusters, and other activities relating to information exchange and dissemination. As a result of these tangential activities and on the basis of lessons learned, some of the activities reported above are not considered vital to a minimal-cost implementation model of IIM. In summary:

- Research activities such as household surveys are probably not vital to the process of CBRM and could be reduced or eliminated in a wider application.
- Events involving the wider community in information sharing or planning are an important part of the implementation and sustainability of CBRM.
- Opportunities arising for involving youth and other special interest groups had wider project benefits.
- CBRM activities need to be flexible and adaptable to situations arising in the communities.
- Catering expenses for large meetings can be avoided by holding shorter events or relying on community contributions to catering.
- Activities relying on Honiara-based community members to act as change agents, both at the site level and from Honiara, appear to have been important but were not quantified.

5.2. Community activities

In addition to measurements of community investment in time and behaviour change, this study identified some community activities that merit further thought:

- The largest proportion of community time investment involved the participation by the wider community in awareness and planning events to ensure community relevance and support. Repetition of these activities (every 1-3 year) is likely to be vital for community agreement regarding management.
- A small proportion of community time investment pertains to activities of the community resource management committees. Although small, the activities of this steering group are considered critical to the development and adaptation of management, and are therefore a high priority in the allocation of financial and institutional support.
- Very little time and investment was registered for enforcement activities which may reflect the early stage of management implementation. .
- Areas that require further investigation include the activities of community change agents based in town (see Cox 2009 for interesting discussion) and the role of local transport for community members, as these were not thoroughly documented in the current analysis.

5.3. Staffing

The case study documents the amount of time used in the various activities by government and NGO staff. Considerations for staffing, based on this case study but relevant to extrapolating this example to a national approach include:

- More staff are implicated in this study in order to “learn by doing” and to carry out research activities than otherwise may be necessary to establish CBRM alone. In practice, most activities could be carried out by two staff members or approximately half the person hours used in establishing the Lau project.
- The activities of the Lau project were coordinated and led by staff of a Fisheries-oriented NGO. This provides an indication of the skills and activities that would be required for replication elsewhere.
- The staffing costs were dominated by technical advisors (senior NGO staff) (85%). These higher costs reflect their provision of essential and scarce skills that will need to be developed in local and government institutions for more cost-effective CBRM implementation.
- A strategy for the transfer of skills and knowledge from NGOs to national and provincial fisheries officers is required.
- Replication of this model can only expect to reduce costs in this respect when skills have been built and ensured and therefore an appropriate strategy for skills transfer will be needed.

5.4. Transport

Travel represents the major expense and a substantial amount of staff time. Close examination may allow for substantial increases in efficiency when replicating the CBRM approach.

- Transport from Honiara to Malaita is a major expense and could be reduced by using or deploying staff at the provincial or even sub-provincial level. This would need to be balanced by ensuring appropriate skills in CBRM, project management and administration are available.
- The number of site trips required for implementation of CBRM in the absence of other research objectives could possibly be reduced by up to half in the first years and probably more in subsequent years.

5.5. Information and capacity building

Three broad stakeholder groupings can be extracted from Table 5 above as targets for information and capacity building:

- Community level: community leaders, resource owners, resource users and local interest groups
- Technical field staff and support: national and provincial government staff, technical advisers and project officers
- Direction and coordination: national and international coordinators, executives, directors and managers

Information requirements for stakeholder groups include:

- Basics of contemporary natural resource management, CBRM principles and processes (*community level*).

- Simple biology of key species, ecosystem functions and linkages, and management tools for these species (*community level*).
- Contemporary principles of natural resource management (EAFM, ICM, etc), CBRM and management planning and facilitation, including monitoring principles and approaches (*technical staff and support*).
- Status of local management plan, compliance, and response of target species stocks (*community level, technical staff and support, direction/coordination*).
- Understanding and awareness of rationale and content of community management plans (*community level including adjacent communities*).

The types of skills required by stakeholders responsible for the implementation and maintenance of CBRM include:

- Facilitation of community planning workshops
- Organizational skills, e.g. committees
- Design and implementation of appropriate research and monitoring to meet specific needs
- Information exchange
- Process and practice of capacity building
- Strategic planning
- Monitoring of implementation / participatory processes (known as process monitoring)

5.6. Institutional capacity

In the case study, a number of functions are performed by an NGO, which, in a national approach, would ideally be performed by government or provincial institutions. While decentralization is vital to ensure that costs and staffing are sustainable in the long term, a process is needed to ensure that vital skills are built at provincial level and that communication is maintained between community, province and national institutions.

5.7. Potential financial costs of a CBRM approach

The calculation of potential financial costs for future approaches to CBRM is necessary for policy and planning purposes. Based on the lessons learned in the case study it is possible to make some estimates of what these costs would be (Table 15). We have assumed a “bare bones” approach defined as our estimate of the reduction in activities and staff that could be made to achieve the basic aims of CBRM in the context of the present case study. This equates to approximately half the travel, activities and staffing for a similar number of villages in a similar geographic setting.

In a context of implementing broader CBRM in the province of Malaita it was felt that some of the major costs incurred by technical advisers might be reduced if substantial support was provided by senior level technical officers (assumed to be Level 12 or above) within MFMR. As implementation progresses costs could be expected to reduce further owing to a further reduction in activities required on-site, sharing of costs for transport and activities with neighbouring sites, a shift of responsibilities from NGO or technical officers to government ones (with technical advisers and NGO staff operating more on-demand) and reduced overall workload.

Table 15: Costs of implementing community based management in Lau and extrapolations of potential costs for a minimum cost approach of the same design (bare bones), that is part of a wider implementation strategy. Costs are estimated for a similar number of communities in a similar geographical setting the early stages (year 1) and after 5 years of development.

	Study reported costs	Bare bones cost	Upscaling strategy year 1	Upscaling strategy year 5
Government officers (National and provincial)	9,442	4,721	4,721	14,140
Project officers	26,600	13,300	13,300	3,500
Technical advisers	213,500	106,750	35,583	10,500
Senior government officers (technical and management)	0	0	6,087	3,043
Activity costs	62,606	31,303	31,303	15,000
Institutional costs (40%)	124,859	62,430	36,398	18,473
Total (SBD)	437,007	218,504	127,392	64,657
Total (USD)	62,430	31,215	18,199	9,237

Under the above scenarios site costs could be in the range of SBD 65-127,000 depending on stage of implementation and with potential further reductions if economies of scale and localization of positions can be achieved. These figures (which equate to a range of USD 9-18,000) are in line with the top end of costs for sites recorded in the South Pacific (Table 16) though the existence of examples in PNG, Fiji, Samoa as well as Solomon Islands of substantially lower costs suggests that there is indeed potential for further cost reductions.

Table 16: Costs of community fisheries management and conservation approaches in Solomon Islands and selected Pacific Island countries (in USD; based on Govan (2009)). The different objectives and scales of the figures are indicative only due to the differing methods of costing between projects.

Country	Site / project	Cost / site	Cost / km ²	Notes
Solomon Islands	Isabel and Western Province / WorldFish	3,000	~100	Project average cost from start-up to ongoing support over three years. 2 large managed areas containing 26 NTZs
Solomon Islands	Western Province MPAs / WWF	16,000		Project average cost from start-up to ongoing support over three years. 4 sites / clusters of NTZs
Solomon Islands	Malaita, Gela, Guadalcanal LMMAs / FSPI	1,850 - 2,570		Includes in-kind and other indirect costs. Averages the start-up and ongoing costs. 20 villages, 17 NTZs. Run by NGO but higher figure includes government, network and technical support.
Solomon Islands	Arnavon Islands MCA / TNC	20-30,000	125-187	Ongoing support. 1 large MPA. NGO budget.
Fiji	FLMMA sites, LMMAs / IAS	500 – 900	15-158	Establishment and ongoing support of ultimately 170 sites (many in clusters) over 5 years. Managed by University with government collaboration (the latter not costed)
Samoa	Village Fisheries Management Programme / Samoa Government	1,350	1,862	Ongoing support. 50 sites and yearly increase of several new sites. Government run.
PNG	Morobe and Kavieng, Village Fisheries Management / CFMDP	3,800		Project costs for site start-up. Ongoing costs estimated at USD \$600 per follow up visit. 22-25 sites.

6. Principles, constraints and responses for IIM in Solomon Islands

6.1. Design principles for integrated resource management in Solomon Islands

Current government policy for Solomon Islands makes it clear that resource management approaches should aim to reach significant proportions of the population in the near future. For instance, “management plans in 50 community-owned marine tenure or clusters” by end 2011 (MFMR 2010) and “50% of Solomon Island coastal, watershed and inshore area under improved management through CBRM and ICM approaches by 2015” (MECM/MFMR 2009). The long-term aim of such management is “to have communities sustainably managing their resources using community-based management plans” (MFMR 2010) and so resource management approaches must not only aspire to service the majority of Solomon Island communities within a relatively short time frame, but also be able to sustain such services in the long-term.

The geographic, institutional and cultural context of Solomon Islands presents opportunities, in the form of organized and empowered local communities with strong rights over local resources. This context also produces challenges such as the widely dispersed geography and low financial and human capacity to provide government services to these areas. Based on the review of policy and the case study presented here as well as relevant regional guidelines on integrated resource management (Govan 2009, Preston 2009, Boso et al. 2010, MECM/MFMR 2009, SPC 2010), the following design principles for a national integrated resource management approach are suggested:

Build community-based approaches

Aim for local management wherever possible. Involve provincial government and, only where necessary, central government in management– the subsidiarity principle.

- Maximize the potential of local management by resource owners and users through the provision of information and appropriate skills and experiences
- Provide support, and minimize obstructions, to local management while avoiding the creation of unrealistic dependencies on government and other agencies
- Ensure that supported communities are motivated by genuine desire to improve resource management and meet other locally established selection criteria (e.g. to avoid conflict)

Incorporate broad social and ecosystem perspectives (including EAFM)

Management approaches need to be as inclusive as possible of the many direct and indirect community interactions with the wider social and natural environment.

- Build partnerships and networks between agencies, between these and communities and also between communities to address ecosystem and sustainable development issues
- Ensure broad geographical coverage of resource management efforts to acknowledge the large home range for many species and the connectivity between different habitats
- Ensure that long-term planning for sustainable development issues such as food security, adaptation and disaster risk reduction are incorporated into community planning activities

Aim for cost effectiveness and a simple design to ensure sustainability

To ensure management processes are supported in the long-term, approaches should be cost effective and able to be adopted by government departments within the context of foreseeable long-term staffing, capacity and budgetary constraints.

- Ensure the design of management processes are simple and understandable to all stakeholders to provide transparency and the opportunity for improvements
- Determine cost-effective inputs with minimum burden on community time to achieve improved resource management over the broadest geographical coverage
- Work with donors to encourage moving from project approaches to integrating management planning services into government budgets, policy and institutions
- Physically decentralize institutions providing key management planning services. Ideally, these will be as near to communities as possible to ensure more responsive support and greatly reduced operational costs

6.2. Constraints and potential responses to implementation of IIM in Solomon Islands

The design principles for a national integrated approach to resource management, presented above, are adapted to the context of Solomon Islands and yet are subject to some major constraints. Some of these constraints occur in many countries while others are specific to Solomon Islands. Some of the challenges and responses to designing these principles are outlined in the remainder of this section. Section 7 proposes a potential approach to IIM accounting for these challenges.

6.2.1. Financial costs and government budgets

Broad scale and long-term resource management is the responsibility of national and provincial governments. Sustained resource management will therefore depend on the extent to which the government dedicates budgetary resources and on the cost-effectiveness of management.

Recent allocations for inshore fisheries in Solomon Islands are available at both the national and provincial level. In 2007, the full budget of the Malaita Province Fisheries department was around SBD \$60,000 and around SBD \$120,000 was approved for 2008 / 2009. Note that this was fully allocated to ongoing operations such as funding local staff, supporting fisheries centres and expected official travel (Table 17). There was no allocation for CBRM.

Table 17: Budget provisions from central government (MFMR) for Malaita Provincial Fisheries Division in Solomon Island dollars (source Max Kori).

Heading	2007/8 Actual	2008/9 Approved	2009/10 Estimate
Employee costs (salaries and allowances)	13,545	33,262	13,850
Employee travel and accommodation allowance	8,604	10,000	6,000
Operating costs	22,026	40,000	70,530
Repairs and maintenance	3,286	5,000	15,000
Training	2,560	15,000	9,000
Travel expenses	12,542	17,200	36,100
	62,564	120,462	150,480

The National Fisheries budget in 2007 (Table 18) allocated around SBD \$1.8 million for Provincial Fisheries which provides the allocations mentioned above for Malaita and also for 8 other provinces, and allocated SBD \$485,000 for inshore fisheries management. There was no provision for CBRM. The entire National Fisheries budget for 2007, including major components such as offshore fisheries, aquaculture and administration, came to SBD \$6.6 million of which about 27% is for staffing. The proposed baseline ministerial budget for 2009 was 40% higher with staffing increasing by 60% (higher still for the inshore fisheries component). A provision for CBRM was made of around SBD \$150,000, however, owing to budgetary constraints, this and other budget allocations were not actually released (S. Tiller Pers. Comm.).

Table 18: Budget of the Ministry of Fisheries and Marine Resources in Solomon Island dollars for 2007 (source Simon Tiller).

Division Name	Staffing	Operations	Total
Aquaculture	97,000	508,978	605,978
Fisheries Management Policy	74,950	145,000	219,950
Headquarters/ Admin	340,064	636,781	976,845
Inshore Fisheries Management	63,281	421,977	485,258
Market Business Development	63,507	335,177	398,684
Offshore Fisheries Management	382,930	1,205,491	1,588,421
Provincial Fisheries	608,616	1,184,594	1,793,210
Statistics and Admin	150,748	410,872	561,620
Grand Total	1,781,096	4,848,870	6,629,966

The environment and conservation budget of MECM has ranged from SBD \$0.7 million in 2008 to an estimated SBD \$2.4 million for 2010 of which 23% is allocated to staffing costs (J. Sisiolo Pers. Comm.). Information on allocations for Climate Change was not available at the time of writing.

Based on the figures provided above, the overall budgetary allocation in Fisheries and Environment for terrestrial and coastal management is in the order of SBD \$10 million which includes specific allocations to provincial fisheries in the low hundreds of thousand per province. While the budgets for sectors such as forestry and planning have not been included in this analysis nor has funding available for climate change adaptation it seems likely that available funds per province will remain below SBD \$500,000 and most likely in the range of SBD 100-300,000 with only a proportion of this available to CBRM or IIM after other functions are accounted for.

The potential cost of site based approaches of SBD 65-127,000 estimated in Section 5.7 would suggest that in the best case scenarios only a handful of CBRM sites could be financially supported in each province.

The challenge
National and provincial budgets available for IIM are low. Even with streamlining and cost-cutting, the costs of travel and staffing are prohibitive if more than a handful of communities are to be adequately supported using current approaches.
Possible responses
<ul style="list-style-type: none"> Reduce costs of transport and staff time by carrying out routine activities using provincially- or locally-based staff

- Reduce the amount of activities requiring staff and / or transport at as many sites as possible
- Regularly review the minimum amount of costly technical advice required for success, and develop strategies for reducing reliance in this area
- Centralized provision of the most expensive technical advice shared over as great an area as possible (e.g. nationally)
- Ensure that cost-effectiveness is a major criteria in strategic planning and evaluation
- Seek efficiency through sharing services and costs between sectors providing similar or overlapping services (e.g. Forestry, Agriculture, Planning, Climate Change, Environment, Fisheries).

6.2.2. Scale

Solomon Islands is a widely dispersed country and travel from the capital to provinces represents high investments in time and money. Even within provinces, roads are the exception rather than the rule and transport has to rely on relatively expensive outboard engine or unreliable and infrequent shipping services. Successful communication is also affected by geographic separation and a lack of communication infrastructure. Experience in the case study and from elsewhere in Solomon Islands (Govan 2009), suggests that transport is likely to comprise the bulk of activity costs and surpasses the cost of local and project staff (excluding technical advisers).

The challenge
Isolation and dispersion of sites represent major and potentially prohibitive activity costs in terms of transport and communication.
Possible responses
<ul style="list-style-type: none"> • Decentralize routine responsibilities as close to target areas as possible • Increase the use of local staff or community facilitators (e.g. village development workers) • Rationalize transport arrangements, eg. share with other projects or government departments or service more communities per trip • Explore more cost effective means of transport • Explore emerging technologies such as phone and internet, and the use of interactive media (DVDs, web etc) for delivering services such as follow ups and awareness • Ensure local communications (eg. community to community) are prioritized • Explore the establishment of rural communications centres in collaboration with other ministries and stakeholders for improved access to internet and telephone

6.2.3. Capacity and skills

Supporting CBRM requires skill-sets and approaches that are still being developed nationally, and for that matter world-wide. There is even less experience in developing integrated or ecosystem approaches. Some skills are relatively easy to develop at provincial or local levels (community facilitation, management planning) some require more training or experience through practice (targeted research, monitoring, training of trainers), while still others represent a challenge to develop (strategic planning, process monitoring, project management and coordination). A major challenge to the broad-scale development of capacity and skills required for CBRM is that different institutions prioritize different fundamental aspects of management (e.g. livelihoods, biodiversity, or fisheries).

The challenge
Defining and developing appropriate capacity for CBRM and IIM
Possible responses
<ul style="list-style-type: none"> • Define (or refine) a nationally appropriate and simple approach to CBRM with a view to defining the priority skills needed in its implementation • Define roles that national, provincial and local stakeholders may perform in fostering the capacity and skills required for a national approach to CBRM • Explore mechanisms to avoid reliance on very few skilled people who have the potential to form bottlenecks in implementation and spread of CBRM

6.2.4. Information, research and monitoring

The implementation of CBRM in Solomon Islands at high input (funds and technical expertise) sites has usually also included the generation of information through research, surveys and quantitative monitoring. These activities require expertise that has the potential to become extremely labour and cost intensive.

The case study and experiences reviewed by Govan (2009) suggest that information is critical but that most information for CBRM is either available locally in terms of local and traditional knowledge of target resources and the communities knowledge of their socio-economic situation and trajectory, or can be provided relatively easily in terms of experience from other sites, simple rules of thumb or from existing biological and ecological research knowledge.

National scale implementation of CBRM will require the collection of information for the purposes of national or provincial coordination and planning. What this information would be and how it could be most effectively obtained needs careful consideration given the high costs incurred by research and monitoring elsewhere. Information needs and collection will need to be addressed by the institutions involved once a national approach to CBRM has been outlined and a potential tool for this is discussed in Annex 3.

The challenge
Basic biological, ecological and social information is required by community-based resource managers and information on performance of CBRM will be required by government and other institutions. The costs of obtaining and disseminating these types of information is potentially prohibitive.
Possible responses
<ul style="list-style-type: none"> • Determine the types and means of delivery of information considered most useful for the purposes of CBRM by various stakeholders • Prioritize disseminating useful information for community resource managers through radio and printed media appropriate to rural communities. • Explore the cost effectiveness of different options to generate information for local, provincial and national purposes of research and monitoring of resource status and the effectiveness of CBRM (including perception-based and traditional knowledge)

6.2.5. Sectoral isolation

Most government sectors now recognize the importance of community-based approaches, however none have implemented financially or logistically sustainable mechanisms to provide long-term services to a significant proportion of the Solomon Islands population. In

addition, the implementation of IIM (and even CBRM) requires collaboration across sectors that is currently rare.

The vital importance of cross-sectoral collaboration to the success of wide-scale approaches to CBRM and IIM has been identified in relevant national policy (e.g. ARDS 2007, NPoA 2009, National Strategy for the Management of Inshore Fisheries and Marine Resources 2009). Fisheries management, environmental sustainability, forestry, disaster risk management, climate change adaptation, and even health and economic development, all need to be considered by the relevant government departments or ministries to ensure successful national implementation of IIM. Information and skill sharing between sectors can ensure that there is no unnecessary duplication of effort and all considerations on the above list are acknowledged when developing nation-wide resource management initiatives.

The cross-sectoral coordination of a single approach to supporting communities on all things to do with resource management is attractive in terms of the costs to the nation in achieving wide spread and long term support of a significant proportion of Solomon Island communities. These costs would be much more easily funded under the government budget if they could be shared across the relevant sectors. This can involve shared logistics, and even staff, at the provincial level. This concept has already been suggested in national policy (MECM/MFMR 2009), but makes particular sense when considering the long-term planning cycles required in evaluating community disaster risk reduction or climate change adaptation plans.

The challenge
Integrated approaches to resource management require the participation of a wide range of government departments and has much potential for sharing of costs and logistics but there is currently little capacity or incentive for coordination and joint implementation
Possible responses
<ul style="list-style-type: none">• Ensure the relevant departments are routinely informed and invited to planning and programming events at national and provincial level• Encourage discussion and agreements on the potential for joint implementation, sharing of logistics, staff and skills• Pursue existing policy recommendation for fisheries officers to serve as a conduit for delivery of priority ecosystem and climate change information to communities

7. A potential approach to implementing IIM in Solomon Islands

7.1. Nested levels of IIM

The following proposed design for the broad-scale implementation of community approaches covering CC V&A assessment, ecosystem approaches, food security, management of key species and habitats, and appropriate use of protected areas (denoted CBRM+ in the NPoA (MECM/MFMR 2009)) is based on the nested system of governance described in Section 3.1 (Figure 2). The remaining discussion in this section focuses on the structure and function of operational units at the levels of community / village, wider catchment or cluster of villages, provincial and national level illustrated in Figure 9.

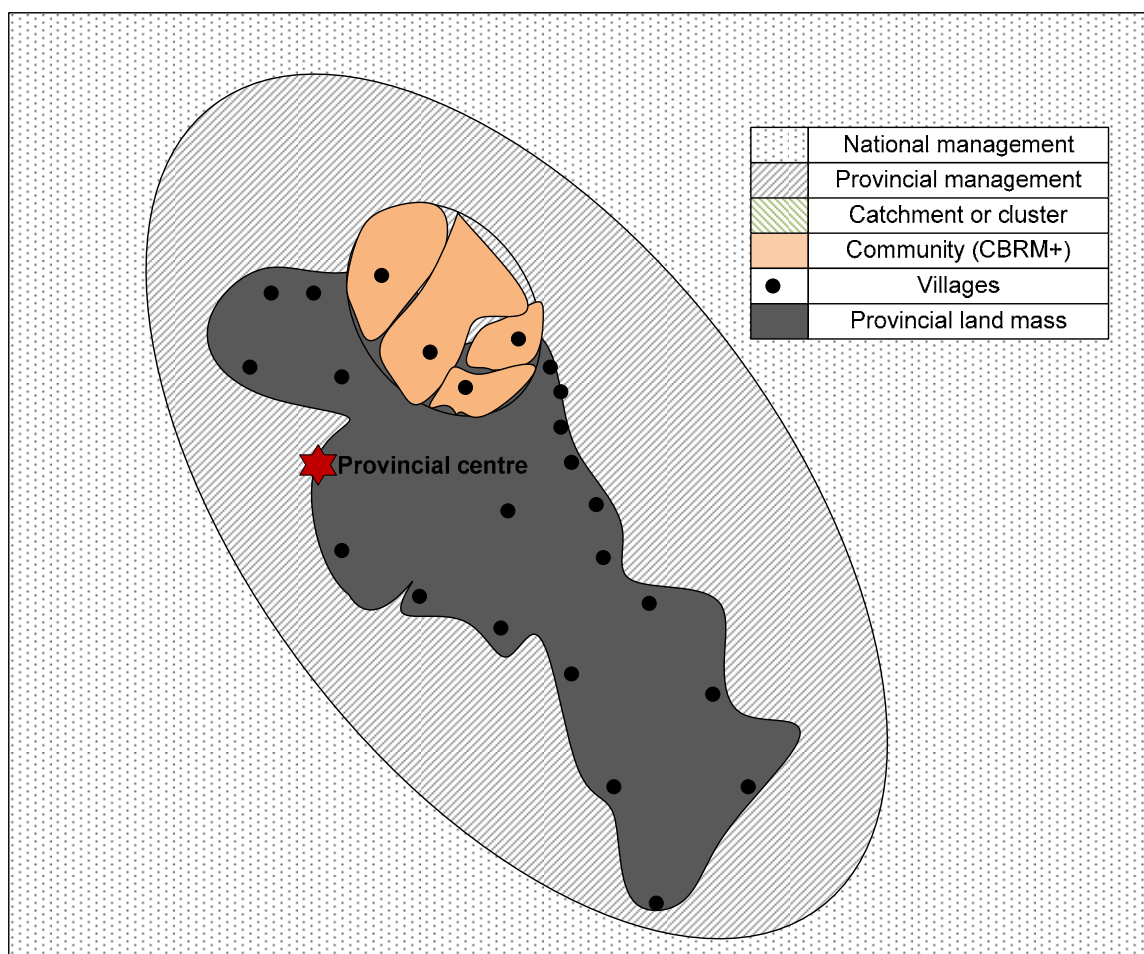


Figure 9: Example of a nested system of natural resource management supporting community-based resource management (CBRM) within a hypothetical Solomon Islands province showing nesting of CBRM+ (the + denotes approaches covering CC V & A assessment, ecosystem approaches, food security, management of key species and habitats, and appropriate use of protected areas) within clusters and at the provincial and national levels.

7.1.1. Operational units: community / village level

Under this model most management is implemented and enforced at the community level. The scale of focus (in this case community) should guide approaches used by support agencies and the “higher” levels of management. Special attention needs to be paid to strengthening the appropriate community organizations (chiefs, associations etc.) and their designated sub-structures (e.g. committees). This will facilitate legitimate decision making

and functional resource management institutions that can plan and implement local management as well as interact with other such institutions at a wider scale.

Best-practice principles and tools for community level activities (MECM/MFMR 2009, Boso et al 2010) draw attention to:

- Rural and peri-urban situations: situations with greater access to markets or near to population centers will need special consideration in terms of stakeholder participation and enforcement
- Appropriate use of a variety of resource management tools: the CBRM+ approach should enable communities to identify local priority issues and / or species. The most appropriate tools for communities to address these issues will need to be adequately described and supported (e.g. net mesh-size restrictions, protection of spawning areas, reserves and no-take zones, replanting or restoration, Fish Aggregating Devices etc)
- Marine Protected Areas in context: MPAs are a useful fisheries and conservation tool but should be applied only where biologically useful, with clear objectives and as part of a broader management framework
- Ensuring two-way flow of information between communities and implementing agencies: special provision is required to ensure local access to latest available information and best practices. Support partners also need to be aware of local challenges, successes and needs for research and further information

7.1.2. Operational units: wider catchment or cluster of villages level

Many of the resource management and livelihood issues facing communities can only be addressed if carried out in coordination with immediate neighbours who share social or ecological systems and concerns. This may imply upstream effects, catchment areas, areas key to the life cycles of target species or social and cultural obligations. The establishment of the cluster-level unit will allow communities to share their local priorities and plans while addressing broader scale issues and allowing for negotiation on effects of neighbouring activities. This level will also be able to perform some degree of surveillance and reporting to government. The meetings and structure of organization at this level will likely benefit from similar methods and principles as those established for CBRM+ at the community level. Strong functionality of community-level management and the interaction of member communities is required though interaction may not be appropriate until member communities have a minimum level of information and skills regarding the implementation of CBRM+. Some of the characteristics of the successful development and sustainability of catchment or cluster level management include:

- Gradual or organic approach: although it is usually necessary or practical to start with community level management, a strategy for including larger scale units (ie. cluster or catchment) should be identified at an early stage and opportunities identified for gradual inclusion of other communities.
- Tailor approaches to the cultural context: the spatial extent of such a larger scale unit will vary but, following previous experiences in CBRM, it would seem appropriate that it should acknowledge social and cultural factors as well as the extent of local ecological systems. Ultimately, communities should designate the scale of management units because it will be very difficult to sustain if the approach is not accepted by the primary stakeholders.
- As self-sustaining as possible: practical considerations, such as cost of communications and transport, will determine whether this level of management can function with the

expected low or negligible levels of external support. One option is to “piggy-back” meetings or events on other community activities such as church meetings or market days.

- It is vital to ensure that representatives at the community or cluster level are aware of local and broad-scale management processes. This ensures they can represent the community position in broad-scale discussions and that the outcomes of these discussions are inserted appropriately back into local management processes.

7.1.3. Operational units: provincial level

In order to sustain IIM support to local and cluster levels implementation will eventually need to become the responsibility of provincial government at which time provincial authorities would lead implementation of CBRM+ and initiate partnerships with national and provincial stakeholders. Once a sufficient body of experience in CBRM+ has been generated then the provincial level consultation, planning, policy development and integrated management can be advanced. Some of the characteristics of the successful development and sustainability of catchment or cluster levels of management are likely to include:

- Coordination of the sectors: at the provincial level coordinated approaches may help meet the specific constraints of geography and institutional capacity.
- Provincial policy development: development of practicable and integrated policies and implementation strategies with the participation of representatives from the cluster or community levels.
- Coordination, planning and programming for implementation: joint implementation and rational use of limited manpower and logistics could include aspects such as shared transport.

7.1.4. Operational units: national level

Under the proposed model, the national government has the responsibility to ensure coordination across ministries and other stakeholders. It would also be the repository for specialist advice and service benefiting from economies of scale such as development of appropriate awareness materials and capacity building. Coordination and provision of key services may reside mainly in one, the most logistically appropriate, ministry but will require close work with other key agencies and a functional partnership to achieve ecosystem and adaptation approaches. Mechanisms for this body (cf. Ecosystem Management Advisory Group of SPC 2010) have emerged that may hold much promise such as the National Coordinating Committee of the CTI and SILMMA. Some of the roles and characteristics of national level of management that would support the proposed model include:

- Coordination across sectors and ministries: high level coordination on policy and priorities, and integration of various sector interests and emerging issues
- Overview, coordination, and strategic planning: programming and monitoring of activities to ensure cost effective execution, timing and coordinated actions
- Re-evaluation of role of agencies towards support and facilitation: internal evaluation and if necessary restructuring/retraining to ensure emerging roles are appropriately supported
- Provision of some more costly services and expertise: technical advice and services requiring costly expertise or equipment may be provided more effectively at this level. This includes liaison with regional providers of such services
- Donor and financial coordination: coordination of projects across sectors to ensure harmony and integrated approaches and avoid parallel processes which reduce focus and divide scarce human resources. Financial planning will include development of long term

government budgets that support implementation of CBRM+ and integrate some service implementation across sectors

- Monitoring and information services: Design and advise on appropriate levels of data and information collection and on effective delivery of information to decision makers

A note on the role of Fisheries Agencies in leading and facilitating IIM

Fisheries issues and approaches may well be the most appropriate entry point for IIM in most communities as issues related to overfishing are frequently raised and the relevant institutions may be best placed to respond. In addition, experience suggests that fisheries issues quite often respond rapidly to concerted community approaches and provide rapid positive feedback encouraging communities to proceed with other management approaches. Other sectors can be brought to bear as and when appropriate.

A further advantage and opportunity is that marine resource livelihood opportunities such as FAD's, mariculture and land based aquaculture can be embedded within CBRM+. This potentially has numerous advantages such as cost effectiveness in implementation as well as improved likelihood of success when legal responsibility for resource management, and any associated commercial development, rests clearly with the resource owners themselves, within the context of a management plan.

The current infrastructure and staff at provincial level would reduce new investment required in getting IIM operational in the field though important contributions would still need to be made from the other sectors to ensure coordination and integration.

7.1.5. Operational units: national, provincial and other networks

The emergence of networks that coordinate communities, NGOs and government agencies has been recognized in policy documents and have the potential to play important roles at all levels and need to be incorporated as appropriate.

7.2. Strategic approach to implementation of IIM in Solomon Islands

Success in moving from the current situation with very little formal support for integrated resource management to providing such support institutionally and in the long term will depend as much on the processes employed as the actual structure that is intended to be implemented. The shift towards a system founded on community based management at the provincial and local level implies major shifts in not only the skills required but in the locus of those skills and institutional capacities; from NGOs to government and from Honiara to provinces or districts. However increased capacity at the provincial level will need to be accompanied by increased budgetary power, gradually increasing in tandem with the capacity to manage it and implement, implying the need to design a long term strategy of 5 years or more. Solomon Islands comprises literally thousands of coastal communities (see MECM/MFMR 2009) and even if costs of establishing CBRM+ were substantially reduced from those incurred by any of the approaches used nationally (Table 16) recurrent budgets would fall far short of being able to assimilate the costs.

An approach to obtaining and improving policy support for strategies such as the implementation of IIM involves basing policy development on emerging experiences from the field – this is particularly appropriate where developing policy in fields defined by the special context of Solomon Islands and for which little or no experience is available elsewhere. By the same token, policy development at the provincial level could be well

advised to proceed slowly in order to incorporate the emerging lessons learned from communities.

For both budgetary and capacity reasons, the process of implementation requires a phased approach in which the focus of action moves from national level to a staggered interaction with the first target provinces in which a gradually escalating approach includes slowly more communities (e.g. Figure 2, MECM/MFMR 2009). A staged approach is important to ensure that expansion does not greatly outstrip institutional capacity for support and management.

Here we describe a possible strategic approach to gaining the widest coverage with a limited budget. This approach is based on learning to date and on the constraints described above. While it will need further discussion amongst stakeholders before being implemented, regular monitoring and evaluation will enable it to be adapted on the basis of accumulated learning. The approach proposed for discussion is predicated on supporting a select number of sites/clusters per province (core sites) and rely on far less intensive support to reach a large proportion of the remaining communities (Figure 10).

7.2.1. Core sites

Initially a number of core sites (with the intention of developing into clusters) (eg. Figure 10) would be selected per province (likely 3-6) based on agreed criteria including interest expressed by the communities themselves, their motivation and the relevance and seriousness of the problems they face. In addition consideration would be given to their strategic location in being able to facilitate lessons learned to nearby communities.

Selection criteria for these sites may include:

- Community motivation and natural resource issues
- Physical, ecological or social representativeness of province's situation
- Location and accessibility by support agencies
- Location in relation to surrounding communities
- Absence of prior history of conservation projects with raised expectations or dependencies

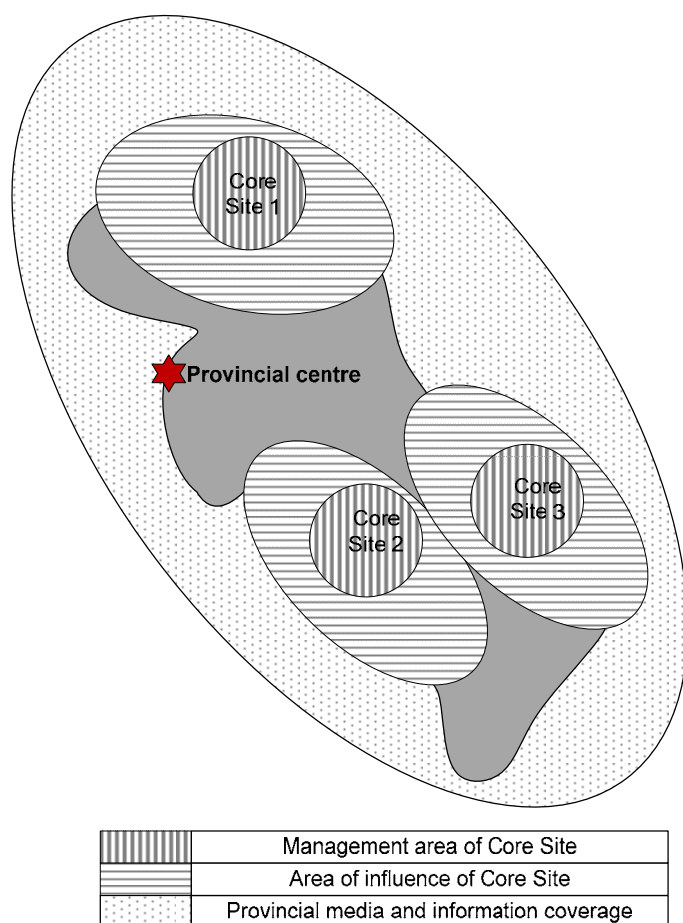


Figure 10: Example of strategic support and deployment of IIM in a hypothetical Solomon Islands province. Three core sites (management areas or clusters) are selected showing the areas of influence on neighbouring communities and opportunities provided for passive expansion of management practices through dissemination of ideas and more general information coverage.

Support to these core sites would be as cost effective as possible, mindful of establishing services that are likely to be sustained by government. While the expectation would be that these sites may serve as examples to surrounding communities, strategically locating these as much as possible will also allow transport from provincial centres to cover intervening areas for follow up with other communities.

It is important to note however that “demonstration” sites have usually under-performed in Solomon Islands proving expensive and showing few if any mechanisms to ensure that lessons learned are disseminated and incorporated in national or provincial policy (e.g. ARDS 2007). In addition, information and exposure to ‘core’ communities is unlikely to be sufficient to enable ‘new’ communities to implement management and so structured follow up for ‘new’ communities will also need to be considered. Active networking or other exchange mechanisms would need to be employed to inform other communities in the province and this aspect will need to be specifically addressed in strategy and work plans.

7.2.2. Other communities

Sites that were not selected as core sites would still have the opportunity to request limited follow up from government services and gain experience from interactions (informal or organized) with core sites. Experiences in Solomon Islands and in Fiji have demonstrated

peer to peer and between-community diffusion of basic management approaches and establishment of management regimes with the aid of some facilitation.

A concerted and strategic information campaign would likely become key in order to raise general awareness of major resource issues, potential community solutions, the CBRM+ approach and the government support opportunities. In the longer term consideration may be given to aligning school curricula with the approaches being used.

7.2.3. Information coverage and needs

The provision of appropriate information will need considerable thought. For example if a radio campaign is to be considered it must mesh with the national and provincial ability to respond to community enquiries and provide sufficient information for community level debate (e.g. leaflets and posters that provide practical information on particular species, ecosystems or management tools that communities can actually apply). Determining the essential information needs for different levels of stakeholders is a vital task and has been discussed in Section 6.2.4.

7.3. Resourcing implications

Based on the preceding discussions the resourcing implications of implementing a national approach to IIM can be outlined in terms of the types of activities carried out at the different levels and how short term approaches can be developed into a long term operational and institutionalized approach. Some details have been explored in the NPoA and are not further elaborated here (MECM/MFMR 2009).

7.3.1. Provincial level resourcing

A provincial budget of between SBD 150-250,000 for IIM would be considerably more than currently available (Section 6.2.1) but not unrealistic in terms of medium term budgeting. Such an amount could at the provincial level potentially:

- Support approximately 3 core sites/clusters
- Support some district and provincial level stakeholder interactions and planning
- Dissemination of information and moderate activities (some ad hoc using travel to and from core sites) as described in Section **Error! Reference source not found.** reaching perhaps 10-20 communities per year.

Costs for a specific site or cluster of sites would be expected to reduce over time. Potential staffing and ToR requirements are outlined in Table 19 and major assumptions are:

- Senior technical advice, information and dissemination costs would be provided and funded at a national level.
- There is regular access to boat and/or truck and running expenses including fuel
- Staff accommodation is secured
- Basic computer equipment is available and able to be maintained
- Communications systems are in place including internet and communications to rural areas

Table 19: Potential personnel requirements for support of Integrated Island Management in one province in Solomon Islands

Personnel	Short term (number and ToR)	Long term (number and ToR)
Provincial field officers (Fisheries or other government department)	<ul style="list-style-type: none"> ▪ 1-3 person/year ▪ Community information dissemination ▪ Community facilitation and follow up (core sites) ▪ Community follow up (other interested communities) ▪ Facilitation of catchment and provincial level meetings and planning ▪ Enforcement and trouble-shooting (ad hoc dispute resolution and support) 	<ul style="list-style-type: none"> ▪ Similar ▪ Assume roles of Provincial Field Officers (NGO/TA) below
Provincial senior officer (Fisheries or other government department)	<ul style="list-style-type: none"> ▪ 0.1-0.3 person/year ▪ Supervision, administration and reporting ▪ Develop technical advisory skills 	<ul style="list-style-type: none"> ▪ Similar ▪ Assume all responsibility for supervision, administration and reporting ▪ Technical advice (first port of call)
Provincial field officers (NGO / Technical Advisors)	<ul style="list-style-type: none"> ▪ 0.5-1 person/year ▪ Train, mentor and support provincial field officers and provincial senior officer ▪ Integrate Climate Change and Ecosystem Approaches liaising with national officers ▪ Establish networking at provincial level and across sectors ▪ Establish communications procedures ▪ Establish reporting and evaluation procedures 	<ul style="list-style-type: none"> ▪ Reduction or total phase out – role assumed by Provincial officers (Government)
Support staff (drivers, others) Community or district level wardens or community facilitators	<ul style="list-style-type: none"> ▪ 1 person/year ▪ Optional part time position, locally recruited. May suit remote and hard to get to locations or early stages of process ▪ Local liaison and facilitation 	<ul style="list-style-type: none"> ▪ 1 person/year ▪ Optional part time position ▪ Local liaison and facilitation

7.3.2. National level resourcing

The roles for a lead ministry and a first approach to determining the level of funding that may be required for national support of IIM is outlined below with the following assumptions:

- Delivery of IIM to provinces is channelled through one government ministry (as discussed above).
- Supporting IIM at the national level may eventually require some review of roles and structures of national ministries.
- Functions cover technical advice and training, data and information management, production of awareness materials, curricula and community guidance
- A major focus on networking, cross sector coordination and harmonization i.e. process
- A phased and sequential approach to engaging with provinces is adopted to avoid “overload”

- Collaboration with other ministries and sectors is an ongoing task particularly with the forestry sector for land-based impacts, education sector and law and justice for enforcement support.

National roles for support of IIM may include:

Coordination of IIM: A team with an overall coordinator and 2-3 staff including a technical adviser in the short to medium term. The responsibilities should be closely tied to inshore and provincial fisheries roles at MFMR but with close liaison with MECDM who in turn may need 1-2 dedicated personnel to provide inputs on ecosystem approaches, climate change adaptation and conservation to information and awareness strategies as well as provision for occasional site visits and field staff training. Nominal requirements: 3 staff MFMR, 2 staff MECDM.

Cross sectoral and intercommunity coordination and networking: Responsibility for national coordination between sectors, with NGOs, between communities and provincial level networking. Nominal requirements 1-2 staff.

Support services: Organizations with existing strengths in the following areas may have responsibility for production and dissemination of awareness materials, information and data coordination, integration of sectoral considerations into provincial approaches. Nominal requirements: 1-2 full time equivalents.

Technical advice: Support and advice may be needed initially until national staff skills are developed in the areas of inshore fisheries management, community information and awareness content and campaigns, information management and possibly CBRM+ training. This support could be provided through a mix of consultants, seconded or collaborating project officers from support organizations (e.g. NGOs, regional organizations) and a few longer term advisers. Nominal requirements: 1-2 TA, 1-2 project officers and consultancy.

A very approximate estimate based on the nominal staffing outlines is in the region of SBD 500,000 excluding TA and consultancy. These would increase costs considerably but could be donor assisted in the short term. Activities and services might cost in the region of 1:1 with staff costs based on ministerial budgets and field experience to date, suggesting a potential cost of some SBD 1 million for central operations.

7.3.3. Overall cost of IIM to lead ministries

The estimated central cost combined with costs for 9 provinces suggests an overall long term budget for IIM may be in the region of SBD 2.5 – 3 million per year. This amount is within the range of existing MFMR and MECM budgets combined and could conceivably be attainable with some increase in government allocations and reallocation of existing internal budget headings.

One strategy for defraying costs alluded to in national policy (MECM/MFMR 2009, MFMR 2010) involved implementation through NGOs. This approach shows much promise given the current expertise and infrastructure in the NGO sector but some important issues will need to be addressed before too much reliance can be placed on this as a strategy, namely:

- Mechanisms are needed to ensure that NGOs deliver the variety of services to which communities are entitled under national policy – most NGOs are specialized in a

single sector. This might involve developing a nationally approved or minimum model for community based management support.

- Ensure that approaches used are cost effective and as much as possible equitable, i.e. that there is transparency in terms of which communities receive support and that approaches reach as many communities as possible.
- Approaches used must ultimately aim to achieve long term sustained support resource management either by building the eventual national system and/or securing long term funding support.

8. Concluding remarks

This report has discussed potential models for Solomon Islands, for the implementation of “a cost-effective and integrated approach to resource management that is consistent with national policy” based on the experiences of one case study (this study) and previously published lessons learned. In summary the design of sustainable inshore and coastal resources management and wider Integrated Island Management in Solomon Islands will be able to draw from national strengths, as community based approaches maximize the opportunities provided by strong communities and traditional tenure. They appear readily acceptable and potentially effective as a component of resource management. The evolving policy and legislative framework has created an opportunity through provision of adequate support to approaches built around current best practice. Further emphasis is needed to ensure that sectoral policies take account of synergies with other sectors, promote joint planning and develop joint implementation strategies.

At this stage the community based approaches currently promoted in a variety of forms around the country will be too demanding in terms of human and financial resources to achieve wide national coverage as currently implemented. For affordable support and implementation of IIM in the long term the following issues will need to be addressed:

- Greater emphasis on cost effectiveness of operations and CBRM+ including the consolidation of delivery for community support through one ministry or joint system.
- Prioritize collaboration and cost sharing across government sectors to achieve community level delivery of services.
- Careful consideration of the decentralization of certain key roles and budget headings to the provincial level while providing some of the more costly services centrally.
- Strategic support of the community based approach in key areas with the development of much less resource intensive support to the majority of other communities.
- Greatly increased attention to the types of information, education and means of delivery most likely to support IIM.
- Design a gradual approach in which roles are decentralized, provincial government develops capacity and assumes greater responsibility and, together with central government, assume more of the responsibilities currently handled by NGOs.
- Employment of a phased or staggered approach to implementation in provinces to avoid overburdening the system and allow opportunities for refining approaches.

International experiences do not provide much guidance to the particular context of Solomon Islands for meeting the challenges of integrated or ecosystem management, Climate Change Adaptation and resilience in line with the countries sustainable development goals. A national discussion on appropriate and sustainable ways to ensure long term delivery of support to the majority of the rural population in Solomon Islands is urgently required before

further investment is made in isolated and pilot approaches to fisheries management, climate change adaptation and ecosystem approaches to management. It is hoped that some of the points raised in this study will be useful for this discussion as Solomon Islands implements a critical and iterative approach to scaling up.

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10. Annex 1: Main policy overlaps in the Fisheries and Environment sectors⁴

<i>Top level policy – strong overlap</i>	
<i>MECM NBSAP/NAPA/CP</i>	<i>MFMR Strategies</i>
<p>“...sustainable management and utilization for better livelihood ... of Solomon Islanders” (NBSAP 5.1-2)</p> <p>People-centred, precautionary, recognize traditional values (NBSAP 5.3.4-7)</p> <p>Integrate national issues in a holistic way so as to adapt to climate change, restore damaged ecosystems and ensure their survival in the long term. (MECM Corporate Plan – Policy Goal)</p>	<p>“Sustainable and secure inshore fisheries and marine resources by 2020” (SMIFMR Vision)</p> <p>People-centred, customized to SI, ecosystem approach (SMIFMR Principles)</p> <p>Multisectoral approach to Environmental Governance incorporating wider ecosystem health, land-use and economic activities (SMIFMR Principles)</p>
<i>Themes and actions – strong overlap</i>	
<i>MECM NBSAP/NAPA/CP</i>	<i>MFMR Strategies</i>
<p>Protected Area system: Community Based Management approach is the intended approach for conservation and sustainable management of marine resources in SI. Collate experiences, develop a management framework which accommodates CBRM, tabus and others approaches. Supportive legislation. (NBSAP 5.6)</p> <p>Build institutional capacity (of ECD): Establish Climate Change Division. Increase capacity at provincial level (ECM Strategies 12.1.2, 3 and 5)</p> <p>Sustainable livelihood alternatives: for “PA communities” (NBSAP 5.6)</p> <p>Research, monitoring and information sharing: improve information and monitoring systems for biodiversity data (NBSAP 5.11)</p> <p>Species conservation: plans for sustainable harvesting and management, build capacity, create awareness NBSAP 5.5</p> <p>Financial: Trust fund and SIG long-term support for PAs (NBSAP 5.6) and relationships with existing and new donors. (NBSAP 5.9)</p> <p>Climate change: build capacity at all levels to address climate change issues in biodiversity conservation. (NBSAP 5.13, NAPA)</p> <p>Coastal protection, Fisheries and Marine resources. Manage and rehabilitate reefs and mangroves. Coastal zone management, traditional resource management. Awareness. Monitoring (NAPA 5.4-5)</p> <p>Mainstreaming biodiversity: conserving biodiversity is integrated into legislation, strategies etc. NBSAP 5.4</p>	<p>Community Based Resource Management: CB initiatives will be the engine of sustainable economic development in the inshore marine resource sector. Developing and refining community-based management plans and testing livelihood diversification/supplementation strategies (half of SI villages in CBRM by 2015). Enabling legal environment that supports communities. Integrate NGO initiatives in SMIFMR. (SMIFMR Principles and activities)</p> <p>Leadership and institutional strengthening: Create inshore fisheries management division, strengthen provincial government and fisheries capacity. (SMIFMR Principles and activities)</p> <p>Livelihood supplementation options: test in 3 provinces, FADs, freshwater culture, seaweed. (SMIFMR Activities)</p> <p>Stock assessment and information systems: Develop stock assessment for 3 national fisheries plans, develop information systems to monitor trends in key fisheries and species. Fisheries fora and networks for information exchange at all levels (SMIFMR Activities)</p> <p>Key commercial species: Develop national management plans for BdM, trochus, corals, dolphins and LRFT. (SMIFMR Activities)</p> <p>Financial: Self sustaining and cost effective and therefore fundable from SI resources. Attract SIG budgetary support. (SMIFMR Principle 6)</p> <p>Climate change: management approaches that allow for fisheries to absorb stress and reorganize. Ecosystem approach encompasses resilience to variability, adaptation to climate change, biodiversity conservation, coastal zone. Adaptive management. (SMIFMR Principles 1, 2, 4, 7)</p> <p>Fisheries cannot be managed in isolation: multi-sectoral approach to environmental governance incorporating land-use, wider ecosystem health. Integration of policy and implementation among ministries at national and provincial level. (SMIFMR Principle 4)</p>

⁴ Adapted from MECM/MFMR 2009

11. Annex 2: Transaction cost analysis of Lau Lagoon CBFM/Resilience project

Costs of CBFM

The objective is examining the cost of the CBFM approach in order to allow comparisons with other approaches (CB and top down) as well as estimate potential costs of large scale and long term application.

Actual project costs will be recorded but in addition it will be important to record transaction costs (TC) of community, NGO and government stakeholders at various stages of the project. It is hoped that this will allow for various analyses including:

- The amount of effort stakeholders are prepared to invest in CBFM, their actual investment and how this relates to success and upscaling of the approach
- Changes in transaction costs over the different stages of CBFM implementation
- Transactions that might require specific support or facilitation to ensure success
- Potential roles or duties of government or non-government stakeholders
- Potential policy design to minimize transaction costs
- Comparisons between sites or countries

Methods

It is considered important that the collection of TC information not constitute a burden to project staff. It is envisaged that TC to date will be estimated and in future will be collected during routine or other site visits. In essence the field team will ask the various partners in the project:

Who did What, Why and How much time, money, food or other was invested?

The principal key informants will be:

- Project staff from Worldfish
- Collaborating NGO staff
- Provincial government staff
- National government staff
- Community liaison and committee members
- Other community members if possible (eg fishermen)

The anticipated actors (Who) include:

- Technical advisers (senior project staff, external advisers, national government advisers)
- Project officers (NGO)
- National fisheries officers
- Provincial fisheries officers
- Other government officers
- External change agents
- Internal change agents
- Community committee
- Resource users (fishers, etc)

The kinds of activity (What) include:

- Travel (powered or unpowered)
- Meetings of up to 4 people
- Large meetings (over 4 people)
- “lookout” static observation or monitoring

The reasons for the activity (Why) would include:

- Information collecting or sharing
- Planning and collective decision making
- Monitoring
- Enforcement
- Liaising with other levels or scales of management (e.g. neighbouring communities or levels of government)

These fit into the proposed transaction cost categories of CBFM (Mustapha et al. 1998) of “information, decision-making, implementation (Monitoring and enforcement, resource maintenance, resource distribution)

An indication of the phase of the project in terms of yet to be agreed stages e.g. “preparation, diagnosis, decision-making, implementation”

The kinds of information to be recorded would be dollar costs (food, fuel..) , person hours... where applicable.

Although this represents a lengthy list it should fit a relatively compact spreadsheet with multiple choice fields that is intended to be quickly updated after each site visit.

12. Annex 3: Cost-effective approaches to meeting information needs for CBRM: a potential framework

The problem with information and research

The last decades have seen an impressive increase in the body of science related to tropical natural resources in the tropics. However, this research is being increasingly criticized for not meeting the expectations of local inhabitants and governments, some governments and development assistance agencies even go as far as labelling it a luxury that does not produce tangible benefits. Critics claim that research has been identified, managed and funded in a top-down, expert-driven, way with the expectation of producing technology transfer for a “quick fix” while in reality producing information of little use to local needs and decision-making processes⁵.

In response to this, attempts have been made in a number of fields including natural resources management, overseas development and conservation biology to ensure more people-centred and sustainable approaches. This echoes a broader shift witnessed in community development, agriculture, fisheries, health and sanitation, public policy – both in the tropics and also the “developed world”⁶.

Participatory resource management – the Pacific approach

The Pacific has embraced participatory management as a best fit to existing conditions of customary tenure, low government budgets and absence of scientific data. Over the last decade or so impressive progress has been seen in the fields of community involvement, empowerment, enforcement and increasingly policy development. Initially experiences have almost always consisted (with the exception of Samoa) of isolated locally managed marine (protected) areas but over time these have proliferated and become more or less accepted as national networks of community managed sites.

Community based management is now flagged as the mainstay of approaches to inshore and coastal resource management in virtually all independent Pacific countries and increasingly in dependent territories as well. The approach is attractive because it is potentially the most practical and cost effective way of achieving tangible improvements in management over widely dispersed territories capitalizing on local connections to the environment and customary tenure.

These decentralized participatory approaches are supported by legislation in Tonga, Vanuatu and Samoa and by draft legislation in Solomon Islands and PNG. Fiji and other countries are proceeding with large scale implementation adapting to existing outdated legislation as well as possible.

Major challenges for Pacific resource management

The Pacific is now faced with the challenge of operationalizing national systems of resource management for which few parallels exist elsewhere. Countries need to design nationally specific processes for promoting, implementing and supporting community based management across entire nations.

⁵ Sayer and Campbell 2004

⁶ Chambers 1983, 1992, 2005

The roles and capacities of national and provincial resource management institutions will need to be re-oriented for these decentralized systems and the minimum and most cost-effective services developed for CBRM based national systems. Cost-effectiveness will be key in these countries with potentially thousands of client communities and very small government budgets facing acute priorities in terms of health, education or disaster management.

In simplified terms the roles of the different resource management of governance levels might be:

- **Communities** will assume the bulk of planning and implementation responsibilities as well as internal and some external enforcement duties.
- **Provincial institutions** will have an intermediary role with potentially coordination of logistical and integrated management functions.
- **National** systems of management based on CBRM will require government agencies to fulfil coordination and general overview roles with occasional and specific interventions in some enforcement or emerging issues.

Adaptive management and the central role of information

Adaptive management or “learning by doing” is central to the community based management implemented at the village level and also characterizes the support provided by government or non-government organizations at various levels.

The generation and dissemination of information is one of the most important considerations for adaptive management and in the Pacific context has proceeded in an organic and sometimes haphazard manner. Inputs of information to the community level have included varying amounts of scientific information (e.g. on theoretical and empirical functioning of various management techniques (especially closed areas), basic ecological mechanisms, some survey data) complemented by traditional knowledge of local resources and management practices. Dissemination of information has often relied on peer to peer exchanges and simple awareness campaigns (e.g. posters, community theatre) on ecological information and “rules of thumb”.

The generation of information at the community level has ranged from the “data-less” - consisting of informal and non-quantitative observational approaches reliant on local or traditional knowledge to scientific monitoring sometimes performed by community members. Recently these processes have been called into question on the grounds of unreliable quality and lack of utility in adaptive management decision making⁷.

The generation of information for national purposes has proceeded in a “researcher-driven” fashion and frequently satisfies external needs for information better than national planning and coordination or community needs.

Research and monitoring represent by far the highest financial and technical costs in current community based management pilots⁸ and these costs would be prohibitive should they be replicated at the national level. Given the vital importance of information to the proposed approaches to Pacific resource management a coordinated and structured approach to information for management is required.

⁷ Reviewed in Govan et al 2008b

⁸ Govan et al 2009

A framework for discussing information generation in the Pacific context

The experiences in community based management over the last decade provide a useful empirical basis for discussion on potential information needs and conceptual models generated in the region⁹ and elsewhere, particularly the frameworks and guidelines produced by DfID's Fisheries Management Science Programme as published in Halls et al (2005) and Arthur and Howard (2005).

National approaches to resource management through community-based adaptive co-management would consist of many co-management units (e.g. village or district level) practicing adaptive management nested within a national system that designs, implements and coordinates national resource management policy and adapts this in the light of results as illustrated in Figure A1.

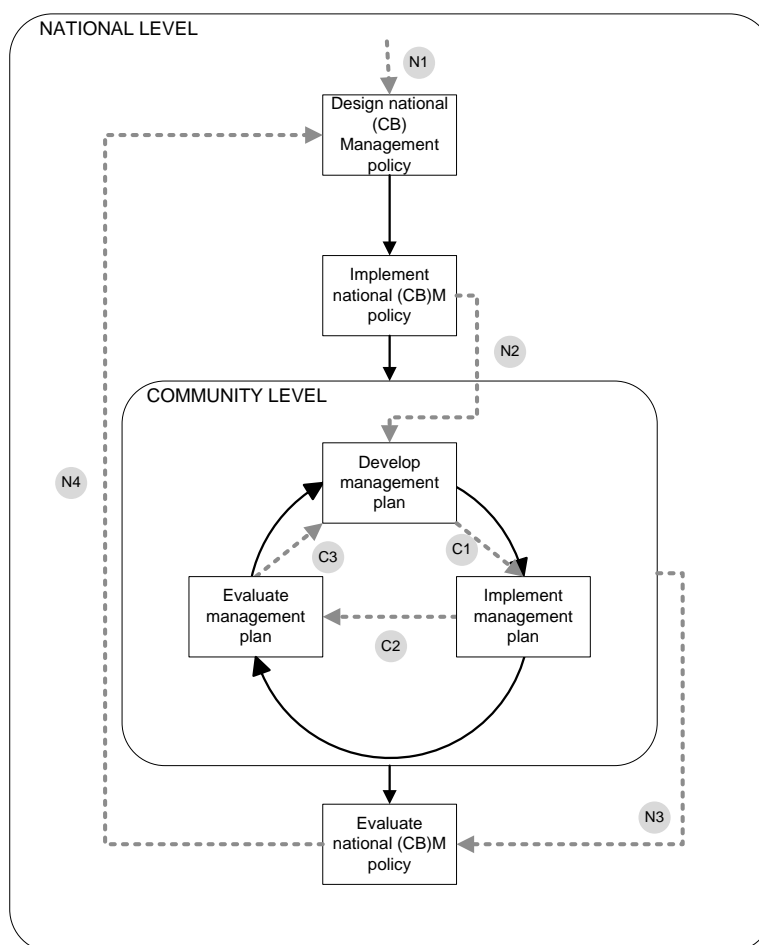


Figure A1: The national co-management process in which the many local or community adaptive co-management units are nested. The dotted lines represent major distinct information needs, number labels explained in the main text (adapted from Halls et al. 2005).

Halls et al. (2005) proposed four categories of information required to support management as used in adapted form in Table A1. An additional factor that should be borne in mind though is that in the Pacific context it is probable that the management approaches will be multi-sectoral with a number of objectives – fisheries management and livelihoods may be a

⁹ King and Lambeth 2000, Govan et al 2008, Boso et al. 2010

primary motivator but there will be strong cost and logistical incentives to use the same approaches in implementing biodiversity conservation, integrated/ecosystem management, climate change adaptation and disaster preparedness approaches for example.

Table A1: Categories of information for co-management with possible examples based on the Pacific context outlined in Fig. 1.

Information needs	Examples of information in Pacific context (Fig. 1)
1. National: for developing and evaluating national policy	N1: regional status of stocks, management experiences elsewhere, international priorities and commitments (e.g. biodiversity conservation, climate change), national priorities (e.g. poverty reduction, integrated management, equity), baseline indicators of the above. N2: basic resource and ecological information, national (or provincial) rules and regulations, best practice advice on management tools, institutional frameworks and sources of further information and support N3: key local resources and issues, management plan rules, status of management, implementation and effectiveness of plan, impact of plan, emerging issues, reporting to donors? N4: effectiveness of national approach, trends, broad-scale implications, impact on national and international priorities, reporting obligations (national and international obligations, donors)
2. Local: required to develop management plans	C1: (and N2): users, tenure and rights, issues, needs and priorities, resource status, management options, others as per N2
3. Local: to implement and enforce management plans	C2: compliance, identity of infringers, legal mechanisms and enforcement support options
4. Local: to evaluate and revise management plans	C3: performance indicators (appropriate to the value of resource managed and effort required)

Based on these descriptors and conceptual models a useful national exercise could be performed based on the management framework and information needs in the above categories set against the realities of stakeholder roles, capacities and available budgets (see Table A2 as an example).

Table A2: Example of format for strategic planning of information collection for natural resource co-management.

Information needs e.g.	Optimum strategy	Existing capacity, roles and finance	Low/no cost options	Interim strategy	Steps to build optimum
National need – N1					
National need – N2					
National need – N3					
National need – N4					
Local need – C1					
Local need – C2					
Local need – C3					

In most countries the desire for optimum information for decision makers will have to be off-set against the cost and difficulty in generating this and strategies for supporting management in the short term while national systems are developed and resourced.

Objectives and audiences for monitoring/information generation

Currently a variety of objectives motivate those designing and carrying out monitoring (Govan et al. 2008 – Box 1) but for the development of viable national and community approaches these objectives will need to be clarified and those not directly related to the national and community needs should be identified and set aside as a secondary priority to be supported externally.

The basic criteria for systems of monitoring developed to serve the Pacific Island context and especially that of Melanesia might include:

1. **Cost:** Extremely low financial cost - governments have low budgets and communities virtually none.
2. **Easy:** Low ‘transaction’ cost which not a burden to implementers as this could lead to monitoring being abandoned.
3. **Simple:** Technical simplicity to reduce reliance on scarce technical capacity and ensure that users can understand processes and results
4. **Targeted:** Optimized to produce key information in a timely manner which is readily accessible to users

Continual evaluation of information generation processes

Just as continual evaluation is key to adaptive management a continual process of evaluation of the information strategies is needed, especially as these may be the most costly and labour intensive components of management. This has been one of the weak points of information and generation strategies in the Pacific to date. Basic questions that should be asked of information strategies include (Arthur and Howard 2005):

1. Was the expected/needed information generated?
2. Was the information disseminated to the right people in a way they understood?
3. Was the information used for management?